ENGINEERING NEWS-RECORD

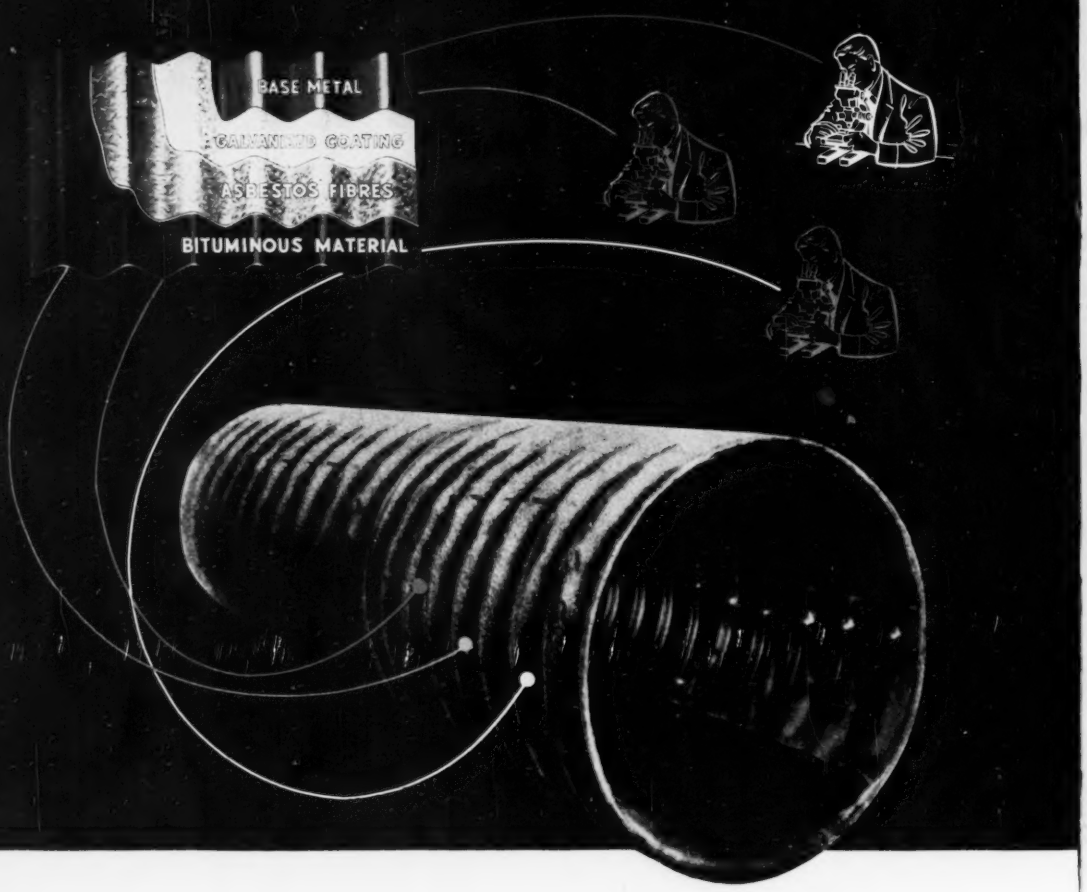
A McGRAW HILL PUBLICATION

FEBRUARY 3, 1949

A huge concrete hangar dominates the river terrain of northern Maine, as the U. S. builds a major postwar bomber base.

• • •

SILICEOUS ADMIXTURE SPECIFIED FOR DAVIS DAM CONCRETE



This pipe has a "built-in" life preserver

Conditions that once spelled failure for sewers and other drainage structures are no longer a worry. ARMCO Engineers were determined to develop a pipe that would take severe corrosion in stride and provide long, economical service life.

They did it by applying a rot-proof and non-deteriorating coating of asbestos. This inert mineral product is inseparably bonded to the pipe. As the sheet metal emerges from the galvanizing unit millions of asbestos fibres are partly embedded in the zinc before it hardens. Then the fibres are thoroughly impregnated with a special saturant and seal coat. When the sheets are corrugated and formed they become ARMCO ASBESTOS-BONDED Pipe—a new kind of drainage structure combining the proved strength of corrugated metal design with great resistance to acid, alkaline and saline conditions.

Creating better products to meet specific needs has been the objective at Armco for more than 40 years. A few examples are HEL-COR Perforated Pipe, STEELOX Buildings, FLEX-BEAM Guardrail, PIPE-ARCH, and sturdy, durable MULTI-PLATE Bridges.

Today you can bring your drainage and construction problems to Armco with full assurance you will receive all the benefits of long experience, extensive research facilities, and a real interest in helping you solve your most difficult problems.

Armco has a complete range of engineered products and convenient, authoritative data to help you. If your problem is unusual, why not talk it over with our engineers?

ARMCO

ARMCO DRAINAGE & METAL PRODUCTS, INC.

MIDDLETOWN, OHIO • OFFICES AND PLANTS IN PRINCIPAL CITIES

Structural Plate Pipe and Arches ★ Corrugated Metal Pipe ★ Welded Steel Pipe FLEX-BEAM Guardrail ★ Water Control Gates ★ Retaining Walls ★ STEELOX Buildings Shooting ★ Tunnel Liner ★ Subdrainage Pipe ★ End Sections ★ Pipe Piling and Pile Shells

These tires work 67 hours for 24 hours' pay

WHEN one brand of tire lasts almost three times as long as another, you've got a real cost cutter working for you. That's exactly what one operator found when he made a test-check of his B.F.Goodrich Universal tires. The operation was strip mining . . . tough service. But the B.F.Goodrich tires averaged 4,571 hours against only 1,600 hours for another make of tire. The B.F.Goodrich tires did 67 hours of work for every 24 hours' work done by the other kind. Many other strip mine operators report similar experiences.

One reason for such marked difference in performance is the *double nylon shock shield* built into all B.F. Goodrich off-road tires size 11.00 and larger. This shield consists of 4 layers of strong, elastic nylon cord built in between the tread rubber and the all-rayon cord body. The layers are in pairs; each pair running at scientifically determined angles with the other to give maximum strength — double bruise protection.

Under impact, each of the two pairs of cord plies in the shields stretch together, not across each other, and return to their original position. Because of this action, impact is *distributed:* absorbed. The rayon cord body is shielded from shock.

Only from B.F.Goodrich can you get the added protection of the double nylon shock shield — the added savings through (1) longer tire life, (2) increased bruise resistance, (3) less danger of tread separation, (4) more recappable tires.

In addition to nylon, Universal tires are built with a specially compounded, cut-resisting tread. And, note the Universal tread design — husky, wedge-shaped cleats which protect the under tread and provide positive self-cleaning by forcing mud and dirt outward along the diagonal grooves.

Find out how B.F.Goodrich off-road Silvertowns can help you pare your operating costs. There's a Silvertown for every need, every job. Get in touch with your BFG dealer or write us direct. *The B.F.Goodrich Company, Akron, Ohio.*

Truck Tires BY

B.F. Goodrich

Setting A New High

IN QUALITY-VALUE

TODAY'S Layne Well Water Systems and Vertical Turbine Pumps set an amazingly new high in long lasting quality and big dollar value. Years and years of constant improvements in design has given them unmatched over-all efficiency. And along with high efficiency there have been tremendous improvements in quality. All strain points have been made heavier and stronger. All bearing surfaces are now tougher and longer lasting.

All in all, your Layne Well Water Systems and Vertical Turbine Pumps of today produce more water at lower operation cost than ever before. Dependability in construction features is not limited to a season or two. They are there to provide service for years and years.

But if service of any nature is ever required, the Nation-wide Layne organization has the facilities and know-how to put your system back in perfect order with a minimum loss of time.

For further information about Layne Well Water Systems and Layne Vertical Turbine Pumps, write for catalogs and bulletins. No obligation. Address LAYNE & BOWLER, INC., General Offices, MEMPHIS 8, TENN.

LAYNE
WELL WATER SYSTEMS

AFFILIATED COMPANIES: Layne-Arkansas Co., Stuttgart, Ark. • Layne-Atlantic Co., Norfolk, Va. • Layne-Central Co., Memphis, Tenn. • Layne-Northern Co., Mishawaka, Ind. • Layne-Louisiana Co., Lake Charles, La. • Louisiana Well Co., Monroe, La. • Layne-New York Co., New York City. • Layne-Northwest Co., Mirwaik e, Wis. • Layne-Ohio Co., Columbus, Ohio • Layne-Pacific, Inc., Seattle, Wash. • Layne-Texas Co., Houston, Texas • Layne-Western Co., Kansas City, Mo. • Layne-Minnesota Co., Minneapolis, Minn. • International Water Corporation, Pittsburgh, Pa. • International Water Supply, Ltd., London, Ont., Can. • Layne-Hispano Americana, S. A., Mexico, D. F.

ENGINEERING NEWS-RECORD

VOLUME 142 FEBRUARY 3, 1949 NO. 5

WALDO G. BOWMAN
Editor

FEATURES IN THIS ISSUE

A Postwar Bomber Base Emerges 56

Siliceous Admixture Selection ..... J. L. Gilliland ... W. T. Moran 62

Heat Pump Conditions 12-Story Bldg 65

Face Stone Earthquake-Anchored on Boston Telephone Bldg 69

Bailey Trusses Used as Bridge Stringers ..... R. M. Starns, Jr. 70

Chlorinating Water Wells Increases Specific Yield 72

Topographic Survey Methods ..... Carlos S. Ospina 73

Canton Modernizes Garbage Collection 74

DEPARTMENTS

Construction Trends	41	Book Reviews	79
Construction Week	43	New Products	84
Editorials	45	Manufacturers Publications	87
News of the Week	47	Elections and Activities	90
Field and Office	76	Men and Jobs	91
Reader Comment	78	Construction Reports	117

Number of Copies 44,073

EDWARD J. CLEARY
Executive Editor

EUGENE E. HALMOS, JR.
Managing Editor

Associate Editors—*New York*, V. T. Boughton (senior associate), F. S. Merritt, R. H. Dodds; *Cleveland*, J. R. Carr; *Chicago*, H. T. Perez; *San Francisco*, N. A. Bowers; *Washington*, V. B. Smith

Assistant Editors—*New York*, John C. Bumstead, T. D. MacGregor and Arthur J. Fox, Jr.; *San Francisco*, L. L. Wise

Staff Assistants—Ethel Lyon, Louise Jacobson, Helen Chase, Elly Kirsten

Business News—Elsie Eaves, *Manager*; J. A. Mahoney, E. R. Biggerstaff, M. W. Roessler, M. Wetzel, E. M. Huber.

Domestic News Bureaus—Atlanta, Chicago, Cleveland, Detroit, Houston, Los Angeles, San Francisco, Washington. Correspondents in 71 cities in the United States, Canada and Mexico.

Foreign News Bureaus—London, Frankfurt, Paris, Moscow, Tokyo, Bombay, Melbourne, Rio de Janeiro, Buenos Aires. *Correspondents*—Athens, Rome, Caracas, Mexico City, Santiago, Shanghai, Zurich, Johannesburg and 40 other cities.

Member ABC

ROBERT F. BOGER
Publisher

Member ABP

February 3, 1949 ENGINEERING NEWS-RECORD Vol. 142 No. 5

Publication Office—99-129 N. Broadway, Albany 1, N. Y.

Executive and Editorial Offices—330 West 42nd St., New York 18, N. Y.

Copyright 1949 by McGraw-Hill Publishing Co., Inc. All rights reserved. Published every Thursday by the McGraw-Hill Publishing Co., Inc., James H. McGraw (1860-1948), founder; JAMES H. McGRAW, JR., President; CURTIS W. McGRAW, Senior Vice President and Treasurer; JOSEPH A. GERARDI, Secretary; NELSON BOND, Director of Advertising; EUGENE DUFFIELD, Executive Assistant for Publications; J. E. BLACKBURN, JR., Director of Circulation. Cable Address, "McGraw Hill New York."

Address all communications about subscriptions to Director of Circulation. Price 35¢ per copy.

Subscriptions: (1 yr., 2 yr., 3 yr.) U. S. and possessions, $6, $9, $12; Pan America, $10, $16, $20; Canada $7, $11, $14; All others, $20, $30, $40.

Please indicate position and company connection on all subscription orders.

Entered as Second Class matter October 29, 1936, at the Post Office at Albany, N. Y., under Act of March 3, 1879. Printed in U. S. A.

On jobs like this...

NORTHWEST ADVANTAGES MEAN MONEY!

Here's rock—the kind of rock that really tests a shovel day in and day out. This is another *Key Machine* spot that calls for the best in equipment. Your Northwest is built for the *Key Machine* spots. It's built to make money. Northwest brings you a combination of advantages found in no other Shovel, Crane, Dragline or Pullshovel . . . advantages that make it a real Rock Shovel—and when you have a real Rock Shovel you *never* have to worry about output in easy digging.

Profits begin in the *Key Machine* spots. You can't afford anything but the best at the heart of the job. Plan ahead now to have a Northwest Rock Shovel.

NORTHWEST ENGINEERING COMPANY
1502 Field Building, 135 South LaSalle Street
Chicago 3, Illinois

- Simplicity of design for easy maintenance.
- Northwest Dual Independent Crowd utilizes force other shovels waste.
- "Feather-Touch" Clutch Control for easy operation.
- Uniform Pressure Swing Clutches for cooler, smoother running.
- Cushion Clutch reduces shock overloads on parts under power.
- Cast Steel Machinery Side Frames assure alignment and reduce wear.
- Alloy Cast Steel Bases for greater strength and rigidity.
- All High-Speed Shafts on Ball or Roller Bearings assure minimum loss to friction.

These and other Northwest advantages assure higher output and greater dependability in the Key Spots.

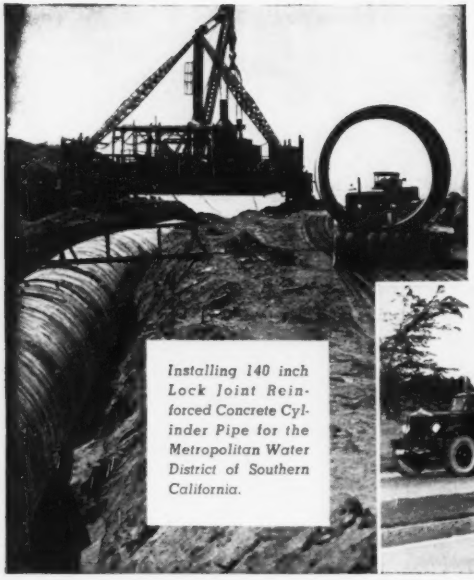
MAKE YOUR KEY MACHINE A REAL ROCK SHOVEL for the heart of the job!
PROFIT

NORTHWEST

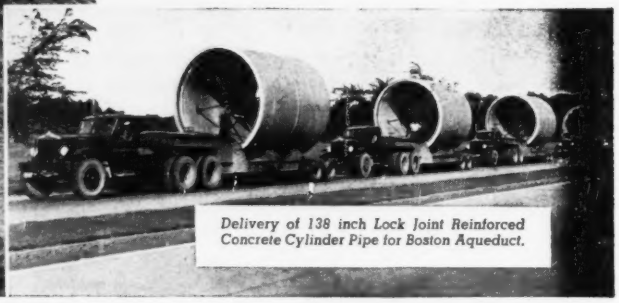
SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

FOR THE *Biggest* JOBS . . .

LOCK JOINT SERVES BEST!



Installing 140 inch Lock Joint Reinforced Concrete Cylinder Pipe for the Metropolitan Water District of Southern California.



Delivery of 138 inch Lock Joint Reinforced Concrete Cylinder Pipe for Boston Aqueduct.

A long record of successful contracts for the manufacture and installation of reinforced concrete pressure pipe in sizes from 16 inches to 150 inches has established Lock Joint Pipe Company as a leader in the field of water supply.

Significantly, Lock Joint Reinforced Concrete Pressure pipe is the first choice of larger municipalities engaged on water supply projects of unusual magnitude.

These are but a few of the major water supply installations built by Lock Joint throughout the past 40 years:

THE CITY OF BOSTON *selected Lock Joint Reinforced Concrete Cylinder Pipe for its 83,000 foot aqueduct. The diameter of the pipe for this huge project ranged from 84 inches to 150 inches.*

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA *chose Lock Joint for 114,000 feet of its water supply system. Lock Joint Reinforced Concrete Cylinder and Bar Cage Pipe ranging from 116 to 144 inches in diameter was used on this project.*

THE CITY OF CLEVELAND *is now engaged in the largest subaqueous pipe installation in history. The Nottingham intake will consist of 120 inch subaqueous pipe running 18,470 feet out into Lake Erie. For this project the City's engineers selected Lock Joint Subaqueous Pipe.*

LOCK JOINT *Reinforced Concrete* PRESSURE PIPE

LOCK JOINT PIPE COMPANY

Est. 1905

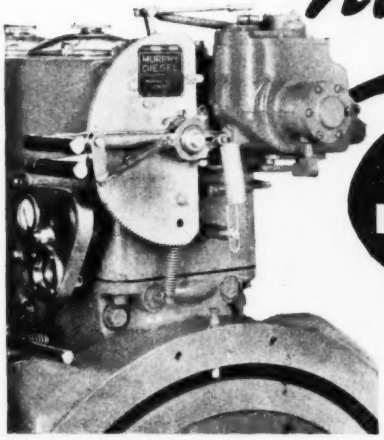
P.O. Box 269, East Orange, N. J.

PRESSURE PIPE PLANTS: Wharton, N. J. • Turner, Kan.

BRANCH OFFICES: Cheyenne, Wyo. • Denver, Colo. • Kansas City, Mo. • Joplin, Mo. • Valley Park, Mo. • Chicago, Ill. • Rock Island, Ill. • Wichita, Kan. • Kenilworth, N. J. • Hartford, Conn.

SCOPE OF SERVICES—Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply and Distribution Mains in a wide range of diameters as well as Concrete Pipe of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous Lines.

"MURPHY DIESELS have eyes"



the hydraulic servo-type governor provides instantaneous response to load changes!

The response of Murphy Diesels to load changes is so immediate that operators in the field have remarked "The Murphy Diesel has eyes!" The engine seems to foresee in advance demands for increased power.

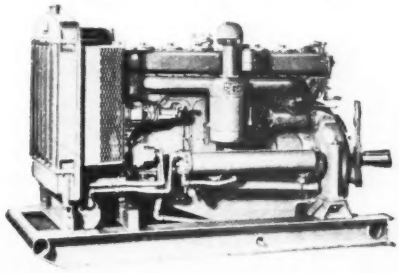
This instantaneous response is made possible by the hydraulic servo-type governor which harnesses lubricating oil pressure to adjust injector controls to meet changing power requirements. The governor flyweights serve merely as a control. By utilizing the powerful pressure of the lube oil the action of the governor is accurate and immediate throughout the speed range from idling to full speed. In the event lubricating oil pressure falls below a safe level the governor automatically shuts off the engine protecting it against possible damage.

The engine itself responds unfalteringly to the governor's control because it is a "true" diesel—solid fuel injected directly into a plain open combustion chamber. Murphy Unit Fuel Injectors, which eliminate all high pressure fuel lines, make possible smooth, precise injection.

Get full details from your Murphy Diesel Dealer. And be sure and ask him for a copy of the helpful bulletin, *"7 Questions to Ask a Diesel Engine Salesman"* or write to:

MURPHY DIESEL COMPANY
5311 West Burnham St., Milwaukee 14, Wisconsin

This Murphy Diesel powers a floating sand and gravel dredge.



Murphy Heavy-Duty "True" Diesel Engines and Power Units, 90 to 215 H.P. Generator Sets 60 to 115 K.W., A.C. or D.C.

MURPHY DIESEL

LOWEST ULTIMATE POWER COST

GREATER ENGINE EFFICIENCY

Lower operating costs

Use the oil that keeps engines clean—
Texaco Ursa Oil X**

Tune in . . .
TEXACO STAR THEATRE
presents MILTON BERLE
every Wednesday night.
METROPOLITAN OPERA
broadcasts every
Saturday afternoon.

TEXACO

TEXACO

YOU'LL get more power, more efficiency, out of your heavy-duty gasoline and Diesel engines . . . and reduce your maintenance and operating costs at the same time . . . when you lubricate with *Texaco Ursa Oil X*★★.

Here's an oil that *keeps engines clean! Texaco Ursa Oil X*★★ is fully detergent, dispersive and resistant to oxidation. It keeps rings free and valves active . . . protects parts against wear and bearings against corrosion. *Texaco Ursa Oil X*★★ keeps your engines on the job longer between overhauls . . . keeps fuel costs low.

For chassis parts of trucks, tractors, shovels and other equipment, lubricate with *Texaco Marfak*. It lasts longer, protects parts better. In wheel bearings, use *Texaco Marfak Heavy Duty* to seal out dirt and moisture, give full protection. Lubricate crawler track mechanisms with effective *Texaco Track Roll Lubricant*.

Texaco has lubricants for all your needs. Use the Texaco Simplified Lubrication Plan. It assures both economy and improved performance. Just call the nearest of the more than 2300 Texaco Wholesale Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, New York.

Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

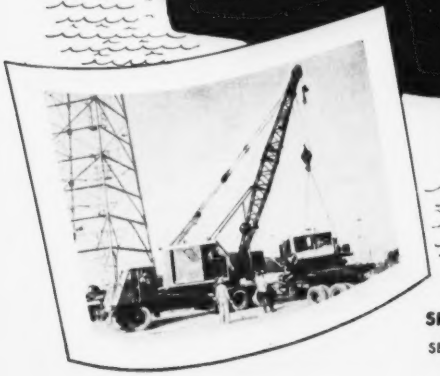
CRANEMOBILE VERSATILE PERFORMER FROM COAST TO COAST!

MILWAUKEE ●

PHILADELPHIA ●

● LONG BEACH

From the seaboard states of the East to the oil-rich soil of the West Coast, Bay City CraneMobiles are moving materials of every sort *with maximum speed and minimum cost.* Illustrated, fully rated 20-ton capacity Model 180 at work on three different operations. Hundreds of other CraneMobiles *handle everything from drag line to steel erection.* See your Bay City dealer or write direct.

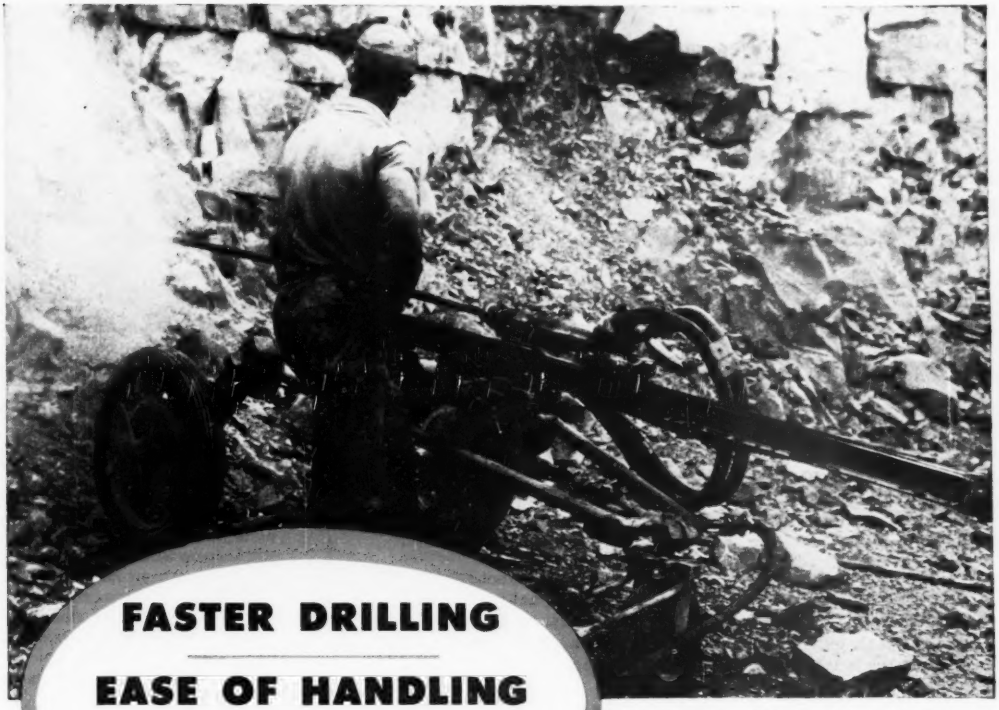


BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS • BAY CITY SHOVELS, INC., BAY CITY, MICHIGAN

SEE YOUR NEAREST DEALER FOR BAY CITY EXCAVATING AND MATERIAL HANDLING EQUIPMENT IN SIZES FROM ⅜ TO 1¼ YARDS HAVING CRANE RATING UP TO 20 TONS. BOTH CRAWLER AND PNEUMATIC TIRE MOUNTING.

JOY ONE-MAN LIGHTWEIGHT WAGON DRILL



FASTER DRILLING

EASE OF HANDLING

LOW MAINTENANCE

Above, *drilling toe-holes—no need to stop drilling to blow. Piston speed and blow automatically adjusted to give fast, consistent and economical drilling in every kind of formation—especially in overburden, clay seams and other material that varies from hard to soft.*

You'll get *more hole* per shift, at lower costs, with the *exclusive* "drill and blow" feature of the JOY Lightweight Wagon Drill. And it's really lightweight—only 750 lbs.—easily operated by one man. Mounts JOY 55 or 65-pound sinkers, and 3" or 3½" drifters, as needed . . . requires no spikes due to the positive locked brakes. JOY pioneered the Lightweight eight years ago—more than 500 now in operation. It can save you time and money—*write for bulletin.*

Consult a Joy Engineer

W&D C 2011

JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING • PITTSBURGH 22, PA.

IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO

You have the time to "have a look" -with a company-owned Bonanza

WILLIAM H. KOENIG
GENERAL CONTRACTOR
BUILDERS BUILDING
CHICAGO 1, ILLINOIS

Mr. Walter H. Beech
Beech Aircraft Corporation
Wichita, Kansas, U. S. A. January 6, 1949

Dear Mr. Beech:

I operate a rather specialized general contracting business, and personally supervise practically all my work. To accomplish personal supervision on out-of-town projects, I must have fast, economical transportation without waiting on transportation schedules.

I find our Bonanza provides this transportation very handsomely. It does it fast enough so that I can leave home at my usual time in the morning, visit projects 400 miles distant and be home in time for dinner that night. To a family man, that's important!

Another distinct advantage is the fact that when visiting distant jobs, I can take both architect and owner with me. The quietness of the plane permits thorough discussion before we arrive. All agree that it is a fast, economical and comfortable way to supervise construction work.

Very truly yours

William H. Koenig

Because the 4-place Bonanza cuts travel time by two-thirds, you have more time for job inspection—and still keep up with home office problems. You can actually undertake *more* jobs without increasing key supervisory personnel. And these aren't just unproved statements. Experience of scores of contractors proves that Bonanza ownership builds profits.

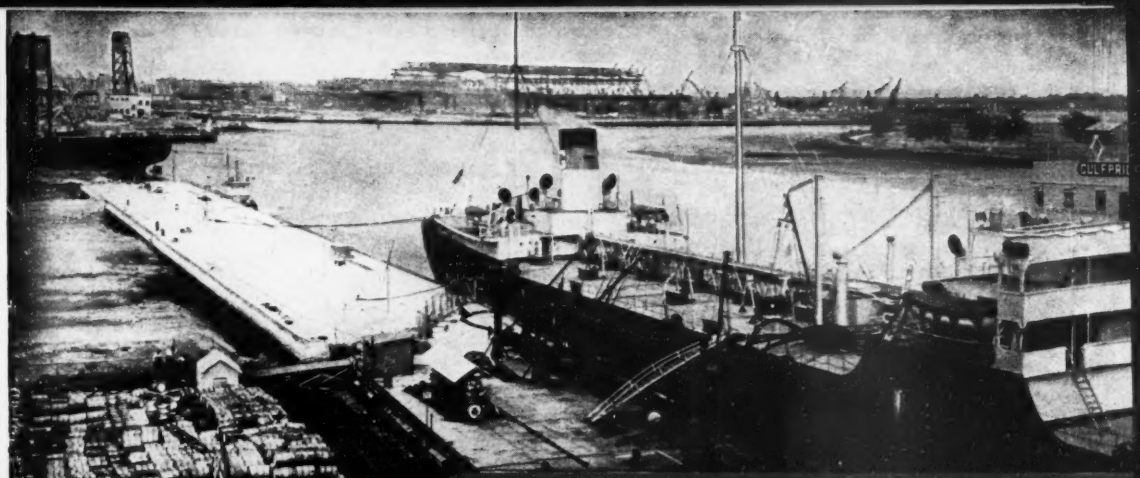
The Bonanza provides you with fast, economical mobility of action at an operating cost measured in pennies per mile. Investigate!

● A note on your company letterhead will bring an informative 60-page brochure on "The Air Fleet of American Business." Write today to Beech Aircraft Corporation, Wichita, Kansas, U. S. A.

Top speed, 184 mph
Cruising speed, 170 mph
Range, 750 miles

BEECHCRAFT BONANZA MODEL A35

BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS



. . . FOR ITS GIRARD POINT WHARF

. . . once again GULF OIL calls on RAYMOND

The Project

For the fourth time in 28 years, the Gulf Oil Corporation entrusted to Raymond the construction of a new wharf at its Girard Point Refinery on the Schuylkill River near Philadelphia. The work included the removal of an old wooden bulkhead and the construction of a new concrete wharf. The wharf consisted of a reinforced concrete deck involving 2500 cubic yards of concrete supported on 400 precast concrete piles up to 85 feet in length with approximately 300 precast concrete sheetpiles 21 feet in length. Included in the project was the construction of a fender system, the electrical installations, the mooring bollards and the dredging of the river bottom to a depth of 36 feet along the face of the wharf.

Raymond's reputation in the industry is based on satisfied clients and repeat orders of this kind.

52 YEARS — FOUNDED 1897 — OF PROGRESS

THE SCOPE OF RAYMOND'S ACTIVITIES *includes every recognized type of foundation construction—concrete, composite, precast, steel, pipe and wood piles. Also caissons, underpinning, construction involving shore protection, shipbuilding facilities, harbor and river improvements and borings for soil investigation.*

RAYMOND CONCRETE PILE CO.

Branch Offices in Principal Cities of United States and Latin America

140 CEDAR STREET • NEW YORK 6, N. Y.

BUY STEEL TAPES WITH EASY TO READ MARKINGS THAT ARE DURABLE

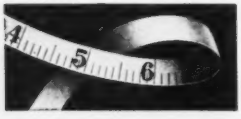
Jungle dampness . . . immersion in sea water . . . chemical fumes—these and many more rugged war time tests have proven Lufkin Chrome Clad to be an outstanding development in measuring tapes.

The illustrations below show why they are the first steel tapes with both durable and easy to read markings, features every tape user will welcome. The hardened steel base is of remarkable toughness and flexibility.

Over this goes a rust resistant coating—next, multiple coats of electro-plating—and then a heavy chrome plating with a non-glare satin finish. Against this light-absorbing surface the jet black markings stand out sharply, easy to read in bright or poor light.

And notice how the markings are bonded to the steel base—sunk below the chrome surface to protect them even against concrete or gravel wear.

If you want to sell a tape that will not crack, chip or peel—a tape that will assure customer satisfaction and repeat sales—sell Lufkin Chrome Clad steel tapes.



KINKS RARELY BREAK THEM

A tough flexible "kink-resistant" steel protects against line breakage, and saves time as well as repair expense.

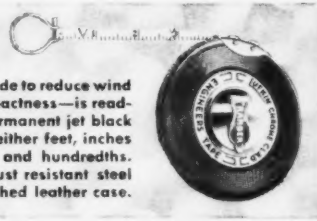
DIAGRAMMATIC CROSS-SECTION VIEW

1. Hardened Steel Tape. 2. Rust Resistant Coating. 3. Multiple Coats of Electroplating. 4. Hard, Smooth, Non-Glare Chrome-Plating. 5. Black Markings Bonded to Steel, Sunk Below Surface.

EASY TO READ IN ANY LIGHT

Durable, easy to read markings stand out sharply against the non-glare, chrome surface, even after years of tough usage.

"RANGER" Model...Lufkin's Chrome Clad tape specially designed for engineers. The sturdy steel line—only ¼" wide to reduce wind resistance and provide compactness—is readily detachable from case. Permanent jet black markings are available in either feet, inches and eighths or feet, tenths and hundredths. Zero falls at end of line. Rust resistant steel liner protected by hand stitched leather case.



Buy LUFKIN

PRECISION TOOLS • TAPES • RULES
FROM YOUR DISTRIBUTOR

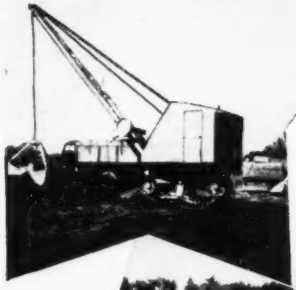
THE LUFKIN RULE COMPANY
Saginaw, Michigan • New York City • Windsor, Canada

ALL-STAR PERFORMANCE ON 1001 JOBS

LOADING FROM STOCKPILE

PILEDRIVING IN CLOSE QUARTERS

CLAMSHELL ON HALF-TRACKS



DIGGING WITH TRENCH HOE

6 Profit-Makers in One Machine

The ⅓ Yard Schield Bantam is designed for rapid conversion from shovel to trench hoe, dragline, clam, piledriver, or crane. It's a time-saving money-maker on a wide variety of jobs all year around. Mounts on any 1½-ton truck chassis — drives up to the job and digs in.

High strength alloy construction throughout with big machine features that mean longer life, freedom from expensive breakdowns, and ease and economy of operation . . . all major assemblies roll on ball bearings . . . modern hook roller design . . . bull gear protected from dirt and grit . . . smooth operating mechanical clutches . . . full circle design . . . fast cycle operation.

For all-star performance get BANTAM dependability, versatility, mobility, and soundness of design.

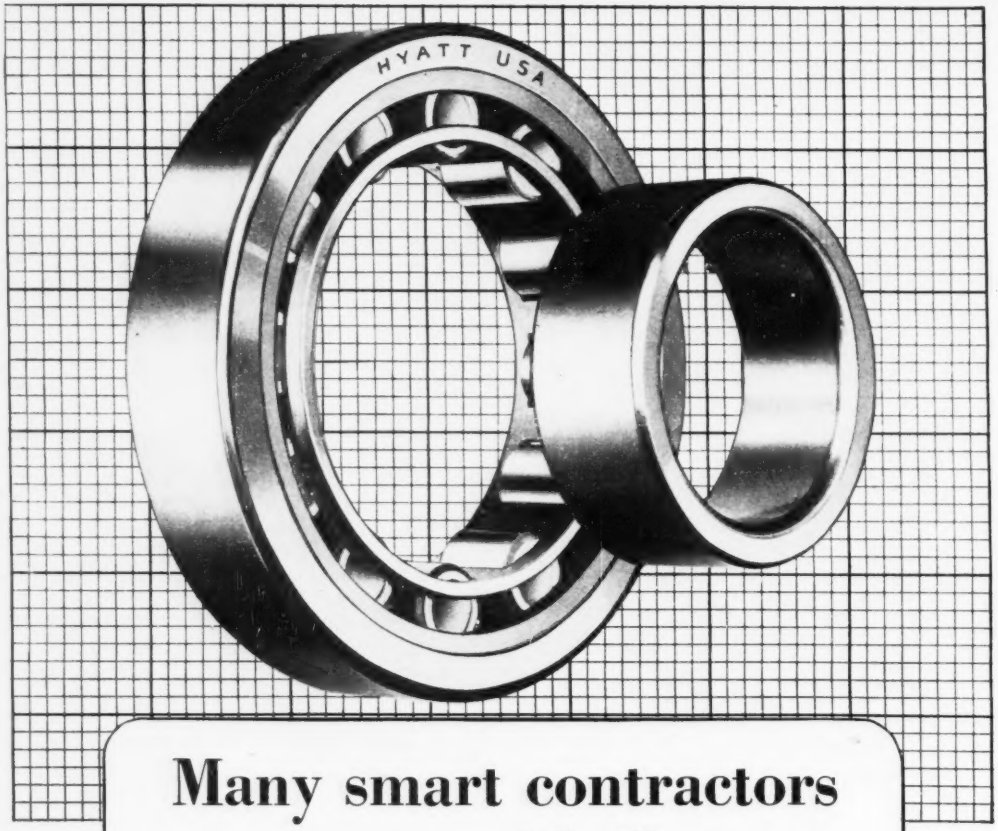
NORMAL CAPACITY PER HOUR { Shovel or Dragline - - - 60 yards / Trench Hoe - - 100 feet of 3-ft ditch

WRITE FOR COMPLETE DETAILS

The SCHIELD BANTAM CO., Inc.
201 PARK STREET WAVERLY, IOWA

THE 1/3 YARD SCHIELD BANTAM
TRUCK MOUNTED TRENCH HOE
SHOVEL • CLAM • DRAGLINE
PILEDRIVER • CRANE

Sold and serviced by leading construction machinery distributors throughout the United States, Canada, and Foreign Countries



Many smart contractors team up with Hyatts

WHEN you figure the daily cost of operating equipment on a job, you must allow for "time out" for unexpected reasons.

Seldom do you hear of a shut down for bearing failures if the equipment has Hyatt Roller Bearings built in at the vital positions.

Thousands of contractors during the years since 1892 have had very favorable experiences with Hyatts in shovels, cranes, pavers, graders, rollers, trucks and tractors.

No matter what type of equipment you buy, if Hyatt Roller Bearings are used you will get extra satisfaction and service for years. Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.

HYATT ROLLER BEARINGS

Hygirtol hydrogen plant under construction

All set for a fast job

THESE piping sections were put together in the fabricating plant while construction was progressing to the point of piping on the site.

Prefabrication with weight-saving, space-saving Tube-Turn welding fittings assured good work under ideal shop conditions. And it means most of the piping is done when piping would ordinarily begin. Installation can now be completed in a fraction of the usual time.

In the shop or in the field, Tube-Turn welding fittings speed and simplify piping assembly. The butt-welded joints, which simply can't leak, eliminate the maneuvering necessary with bulky threaded connections. Dimensional accuracy and true circularity make alignment a cinch.

For good service in good connections, deal with the Tube Turns distributor. He handles the biggest line of welding fittings.

TUBE TURNS, INC.
230 E. Broadway, Dept. D, Louisville 1, Ky.

District Offices at New York, Philadelphia, Pittsburgh, Chicago, Houston, Tulsa, San Francisco, Los Angeles

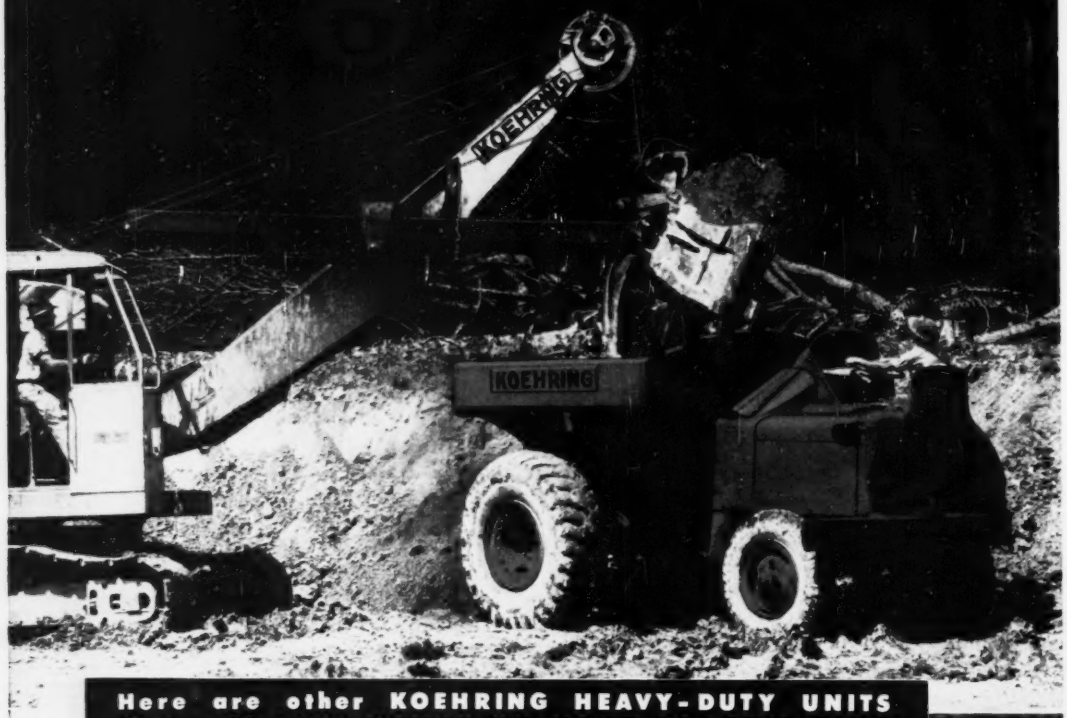
Write for copy of research paper presented before A.S.M.E. — "Fatigue Tests of Welding Elbows and Comparable Double-Mitre Bends".

TUBE-TURN

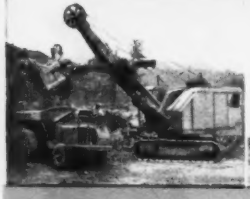
tt

WELDING FITTINGS AND FLANGES

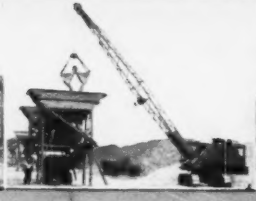
Fast DUMPTOR MAKES MONEY



Here are other KOEHRING HEAVY-DUTY UNITS that will SAVE MONEY ON YOUR ROADBUILDING:

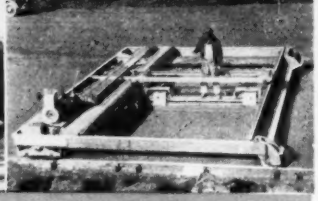


¼-YD., ½-YD., 1¼-YD., 2½-YD. SHOVELS
for low-cost, high-production excavation in heavy cuts or rock.



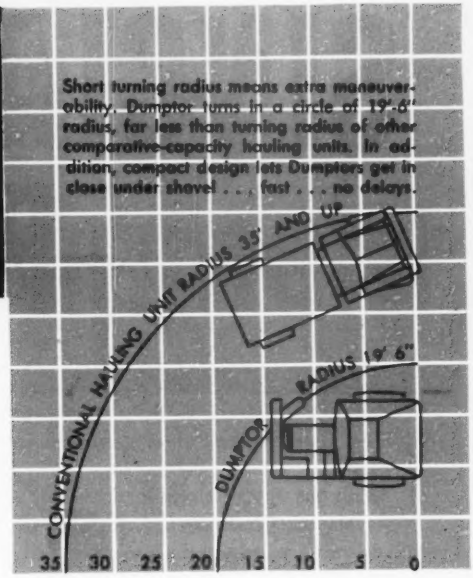
CLAMSHELL CRANES
for stockpiling aggregates . . . feeding cement batch plants.

TWINBATCH PAVER
for more batches mixed per hour . . . more concrete laid per shift.



LONGITUDINAL FINISHER
for accurate surfaces finished fast, at low cost and as specified.

spotting 2 WAYS

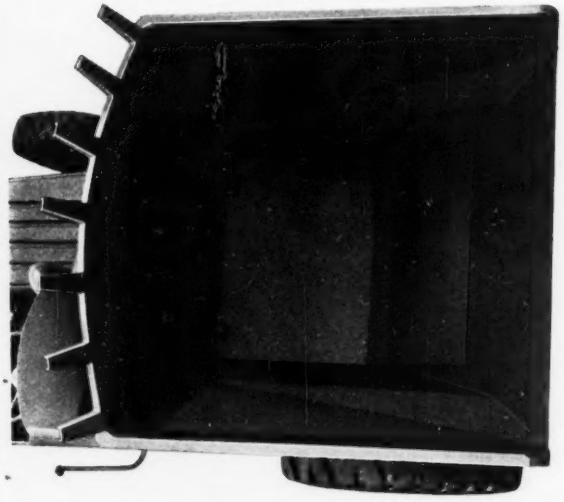

Short turning radius means extra maneuverability. Dumptor turns in a circle of 19'-6" radius, far less than turning radius of other comparative-capacity hauling units. In addition, compact design lets Dumptors get in close under shovel . . . fast . . . no delays.
CONVENTIONAL HAULING UNIT RADIUS 35' AND UP
DUMPTOR RADIUS 19' 6"
35 30 25 20 15 10 5 0

1 MORE LOADS PER HAUL UNIT

Koehring Dumptors save slow jockeying back and forth at the shovel. Wheel base is only 102". You can turn in circle of 19'-6" radius, far less than turning radius of other hauling units of comparative capacity. That means extra maneuverability to get spotted fast and accurately without help. Driver always faces load, can see all around. Every second saved in the cut means extra haul-time, less shovel delay . . . more loads delivered.

2 MORE PRODUCTION BY SHOVEL

Big, 64 square-foot body opening speeds shovel loading. Here's a big target your operator can hit fast and easy. Because of compact design, Dumptors can get in closer than more cumbersome units . . . makes it easy to keep shovel swing short. Reducing swing-time only 10 to 15% can increase your shovel production average as much as 5%.



Dumptors give you many other time and money-saving advantages: big tires, high ratio of horsepower to weight, mean fast haul over any kind of construction road . . . 3-speed travel, both forward and reverse, gives you no-turn shuttle haul . . . 1-second gravity dump saves you 15 to 25 seconds every dump . . . rugged, heavy-duty construction gives you less down time, more work-time. Ask your Koehring distributor to show you what Dumptors can do on your roadwork and any other "off-the-highway" dirt moving jobs.

This is what shovel operator sees when he's loading Dumptors. Body flares out to big 8' x 8' top, is easy to load. You can keep shovel swing short, because Dumptor gets in close . . . square-shaped body permits loading over side or end . . . fast spot . . . quick get-away.

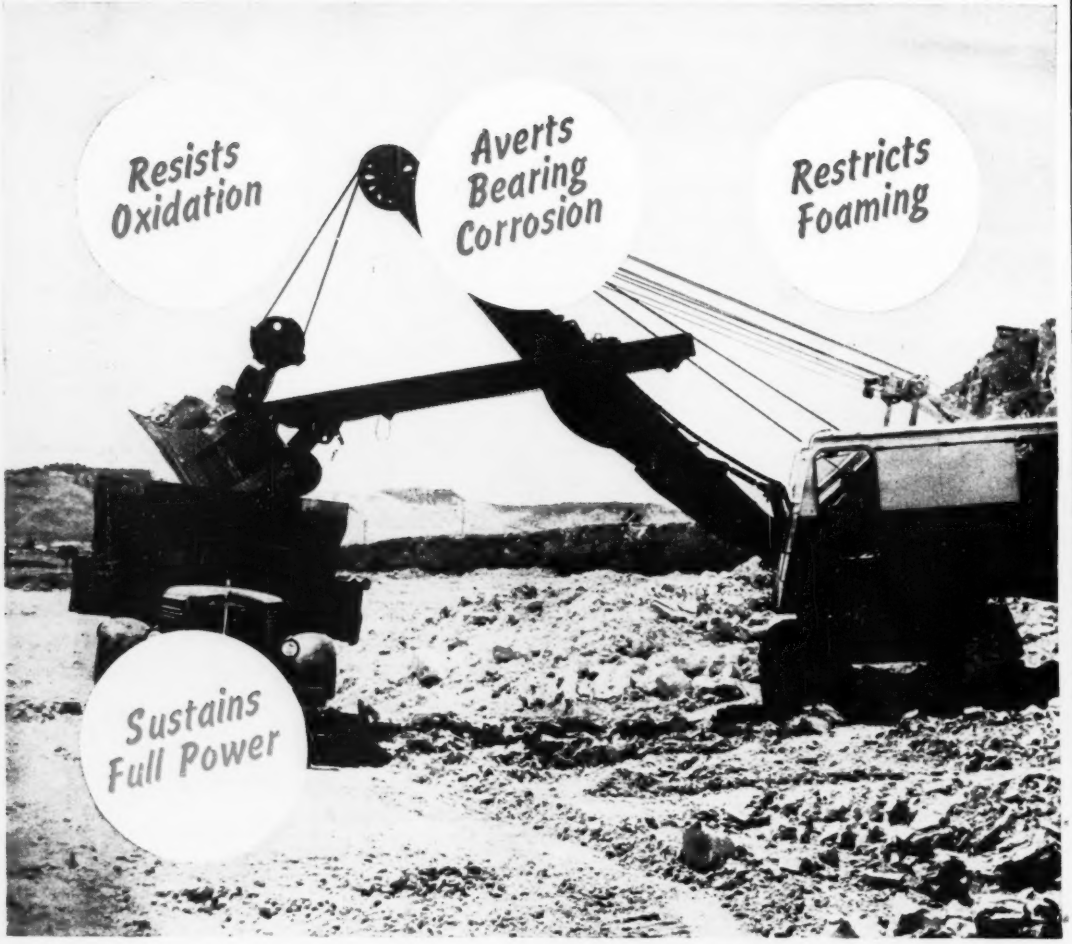
KOEHRING HEAVY DUTY

KOEHRING COMPANY, Milwaukee 10, Wis.

Subsidiaries: JOHNSON • PARSONS • KWIK-MIX

DUMPTOR, TWINHATCH—Trademark Reg. U. S. Pat. Off. K898

SINCLAIR TENOL Problem in



SINCLAIR

YOUR NEAREST SINCLAIR AGENT WILL GLADLY ARRANGE

Ends Sludging Diesel Equipment

A major problem of diesel engine operation is the formation of sludge, gum and varnish on valve stems, rings and other engine parts, which causes engine drag, increased operating costs and frequent tear-downs.

This problem is solved by the use of Sinclair TENOL for diesel engine lubrication. Sinclair TENOL contains special Sinclair-developed additives to prevent the formation of sludge, gum and varnish. TENOL holds these harmful elements in suspension so that they are drained out with the oil at oil change periods.

Sinclair TENOL cleans as it lubricates, thus increasing time between tear-downs and lowering cost per operating hour. Try Sinclair TENOL in your equipment.

Continual research explains the high quality of TENOL and other Sinclair Oils. Sinclair has recently completed at Harvey, Ill., one of the most modern and complete laboratories for petroleum research and development.

E. W. Isom, Sinclair Vice-President in Charge of Research says: "With the new facilities now made available to us at Harvey, Ill., we expect to find many ways to help industry cut costs through better petroleum products."

HEAVY DUTY LUBRICANTS

FOR LUBRICATION COUNSEL, OR YOU MAY WRITE TO SINCLAIR REFINING COMPANY, 630 FIFTH AVE., NEW YORK 20, N.Y.

Switch to a HENDRIX

FOR MORE PROFIT . . . LOWER MAINTENANCE

★ Full Payload Every Time . . . FOR MORE PROFIT.

★ Rugged all-welded construction . . . LOWER MAINTENANCE COST.

★ 12% Manganese Steel Chains and Fittings . . . STANDARD ON ALL TYPES AND SIZES.

★ A Type for every job . . . light, medium, or heavy-duty. WITH OR WITHOUT PERFORATIONS.

BREAKDOWNS caused by faulty machines or equipment result in loss of time and money. Hendrix Lightweight Dragline Buckets are designed to handle and are capable of handling all types of excavating with less loss of time and with less maintenance.

The HENDRIX is a *tough bucket!* Manganese Steel chains, fittings, and tooth points take the brunt of abuse. The all-welded construction assures maximum strength during operations. Perfectly balanced, this is the one bucket with which operators can easily get a full payload every trip. It's the one bucket operators throughout the country know can "take it" and give long-lasting service.

HENDRIX *Lightweight* **DRAGLINE BUCKETS**

For descriptive literature ask your dealer or write to

HENDRIX MANUFACTURING CO., INC.

MANSFIELD — LOUISIANA

It's New!

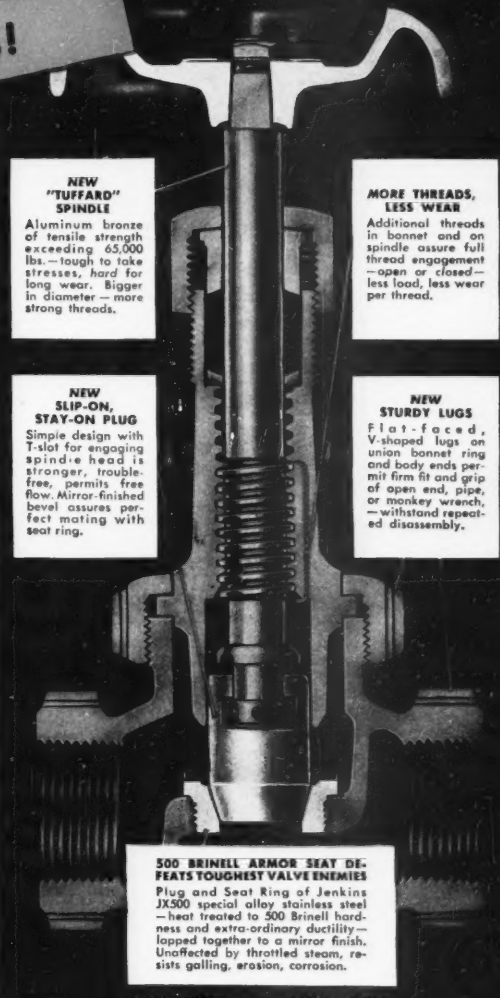
JENKINS ANSWER TO VALVE-KILLING SERVICES!

JENKINS Fig. 976-A

PLUG TYPE

Armor Seat

BRONZE GLOBE VALVE



NEW "TUFFARD" SPINDLE

Aluminum bronze of tensile strength exceeding 65,000 lbs.—tough to take stresses, *hard* for long wear. Bigger in diameter—more strong threads.

MORE THREADS, LESS WEAR

Additional threads in bonnet and on spindle assure full thread engagement—open or closed—less load, less wear per thread.

NEW SLIP-ON, STAY-ON PLUG

Simple design with T-slot for engaging spindle head is stronger, trouble-free, permits free flow. Mirror-finished bevel assures perfect mating with seat ring.

NEW STURDY LUGS

Flat-faced, V-shaped lugs on union bonnet ring and body ends permit firm fit and grip of open end, pipe, or monkey wrench,—withstand repeated disassembly.

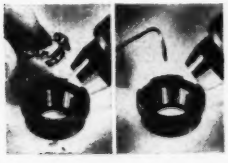
500 BRINELL ARMOR SEAT DEFEATS TOUGHEST VALVE ENEMIES

Plug and Seat Ring of Jenkins JX500 special alloy stainless steel—heat treated to 500 Brinell hardness and extra-ordinary ductility—lapped together to a mirror finish. Unaffected by throttled steam, resists galling, erosion, corrosion.

300 lbs. Steam ..... 600 lbs. W.O.G.

BUILT TO BREAK RECORDS FOR LONG LIFE

Now, for the most severe services, you can choose the new Jenkins Fig. 976-A with complete confidence that it will set new economy records. Use it for pressure regulation, bleeds, drips, and drains, or any close regulation of steam that threatens wire drawing. It will lower maintenance, last longer, where entrapped pipe chips, scale, or rust tubercles are a problem.



SMASHED PIPE CHIPS, WIRE, LEAVE NO SCARS

Steel pipe chips and 1/16" wire rod, with Brinell hardness in excess of 300, were crushed between the new Jenkins JX500 Plug and Seat Ring without leaving a scratch or dent. That's proof of super hardness!

Compare Fig. 976-A, part for part, and see why it's as nearly wear-proof, trouble-proof, and maintenance-free as any stock valve can be. Only a few of the dozen ways it's better are shown here. Get the complete story in the new folder. See why it's unrivalled for endurance and economy,—why it's your best buy in plug-type valves! Use coupon.

Jenkins Bros., 80 White St., New York 13; Bridgeport, Conn.; Atlanta; Boston; Philadelphia; Chicago; San Francisco. Jenkins Bros., Ltd., Montreal.

LOOK FOR THIS TRADE JENKINS MARK DIAMOND MARK

SINCE 1864

JENKINS VALVES

Types, Sizes, Pressures, Metals for Every Need

GET COMPLETE DETAILS—IN THIS NEW FOLDER

Mail Coupon Today!

JENKINS BROS., 80 WHITE ST., NEW YORK 13

Please send Armor Seat Valve folder—Form 193

Name .....

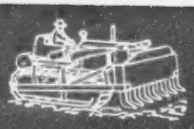
Company .....

Address .....

This International TD-18 Diesel Crawler and matched 10-yard scraper is improving a 2-mile stretch of farm-to-market road for its owner—Wayne County, Nebraska, County Highway Commission. The TD-18 is digging ditches, sloping banks and leveling roadway.

CRAWLER TRACTORS
POWER UNITS
DIESEL ENGINES
WHEEL TRACTORS

INTERNATIONAL



CO$T-CON$CIOU$ COUNTY COMMISSIONERS *Choose* INTERNATIONALS

Stretching county road construction and maintenance money to do the job takes a bit of doing. That's why cost-conscious county highway commissioners select International tractors and International-powered road machines. International's power-packed performance for every penny of fuel consumed pays off in work done. That means more earth moved and more miles of road built for every dollar invested.

International tractors and engines are built to stand up under the roughest going—to give you more for your money. Contractors and county boards alike, are finding Internationals pay for themselves in a hurry and then continue to pay dividends for a long time to come.

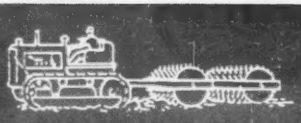
It's good to know your International Industrial Power Distributor is always on hand to help you select International equipment for your needs and to service your equipment, keeping it in top-notch operating order.

INTERNATIONAL HARVESTER COMPANY
Chicago

Listen to James Melton on "Harvest of Stars" every Wednesday evening—CBS

INTERNATIONAL HARVESTER

Industrial Power



Frank Mashuda Company, Portersville, Pa., has the contract to construct a new 12-mile 3-lane section of U. S. Route 422 between Mt. Chestnut, Pa., and U. S. Route 19. The project involves moving over 1,300,000 yards of earth and rock. Gulf quality lubricants and fuels are helping to keep the job well ahead of schedule.

Gulf Products *keep equipment rolling*

help prevent delays on big highway job!

Frank Mashuda Company is one of many leading contractors who have found that the use of Gulf quality petroleum products insures smooth, dependable equipment performance and low maintenance costs.

Gulf gasoline and Diesel fuel are clean burning, have exceptionally low carbon content, and provide more efficient power. Gulf quality lubricants provide an extra margin of protection—prevent excessive wear that leads to mechanical delays.

Gulf Lubricants and Fuels team up to help contractors do a speedier, more profitable job!

Gulf Oil Corporation · Gulf Refining Company

Division Sales Offices:

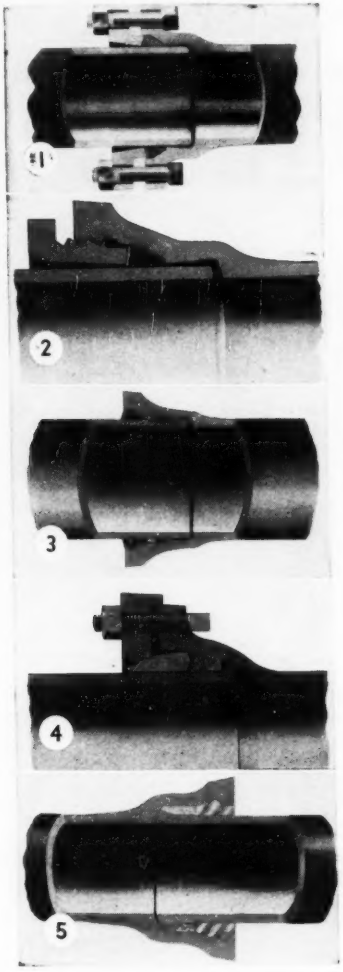
Boston · New York · Philadelphia · Pittsburgh · Atlanta

New Orleans · Houston · Louisville · Toledo

GULF

Mono-Cast CENTRIFUGAL PIPE
WITH JOINTS FOR EVERY SERVICE CONDITION

Mono-Cast Centrifugal Pipe can be supplied with joints for conveying water, gas, oil, sewage, and other liquids under every service condition. In most cases, these joints can be made up with unskilled labor and without special tools. Among the joints available are:



1. DOUBLEX SIMPLEX JOINT PIPE—A standardized *mechanical joint pipe* equipped with stuffing box type of joint having a ring gasket, cast iron gland, and cast iron bolts. Scientifically designed to meet the exacting requirements of low, medium and high-pressure service in handling gas and liquids.

2. SCREW-GLAND JOINT PIPE—An all-purpose economical, mechanical joint pipe suitable for water, gas, oil and other fluids, developed in answer to the demand for a rubber packed joint without bolts suitable for normal service and pressure conditions. Screw-Gland Pipe provides for liberal lateral deflection and provision for expansion and contraction of the pipe line without leakage.

3. ROLL-ON-RUBBER RING JOINT PIPE—Designed as an alternate for bell and spigot pipe for conveyance of water, sewage or similar liquids. It is quickly and easily assembled by unskilled labor and after assembly the joint will easily deflect and remain tight under pressure.

4. MOLOX BALL AND SOCKET JOINT PIPE — An exclusive Acipco development, designed for river crossings and other installations requiring excessive joint deflection. It is positively locked against joint separation and remains bottle tight under pressures up to several hundred pounds per square inch at any angle within the range of deflection for which it is designed.

5. STANDARD BELL AND SPIGOT PIPE—Used under normal service conditions, the standard bell and spigot joint will give long and dependable service. The joints of bell and spigot pipe are made up of lead and jute, cement, or any other special jointing material customer may desire to use. It is supplied in diameters 3" through 48" inclusive.

AMERICAN CAST IRON PIPE COMPANY

Birmingham 2, Alabama

DALLAS • HOUSTON • EL PASO • PITTSBURGH • KANSAS CITY • NEW YORK CITY
CHICAGO • MINNEAPOLIS • CLEVELAND • LOS ANGELES • SAN FRANCISCO • SEATTLE

Eliminating Bad Curve On New York's Route 26

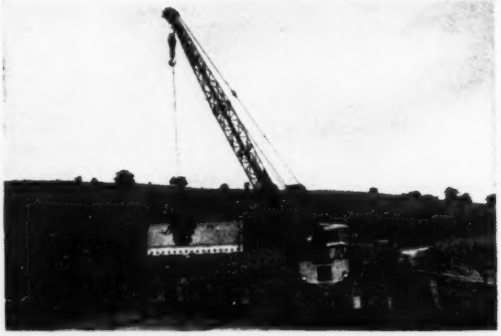
Above: Heavy grader makes short work of stones and dirt as it smooths the way for bridge approach.

Right: To provide firm foundation, Bethlehem H-Piles are driven to solid rock. Over 100 tons of H-Piling were used in building the two bridges.

Below: Crane swings load of Bethlehem Reinforcing Steel onto partly-built bridge.

Construction detail is discussed by Robert Baker (left), general foreman, and Edmund P. Smith, superintendent, both of Binghamton Construction Co.

The construction scenes shown here were taken recently at Glen Aubrey, N. Y., during a curve-elimination project on Route 26, popular north-south highway originating southwest of Binghamton, at the boundary with Pennsylvania. The project was handled by the Binghamton Construction Co., Binghamton, N. Y., and included the erection of two 50-ft-span bridges. Reinforcing Bars and H-Piles were furnished by Bethlehem.



Spreading blanket of concrete over Bethlehem Reinforcing Bars in bridge deck.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

STEEL FOR HIGHWAYS

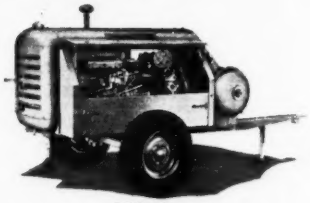
Dowel Units • Reinforcing Bars • Bar Mats • Guard Rail
Guard Rail Posts • Wire Rope and Strand • Pipe
Hollow Drill Steel • Spikes • Bolts and Nuts
Timber Bridge Hardware • Tie-Rods
Sheet and H-Piling • Fabricated Structural Steel

BETHLEHEM STEEL

the NEW KA-*series*

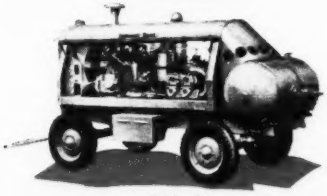
Ingersoll-Rand MOBILAIR AIR POWER

...the line of Compressors full of SupIR features

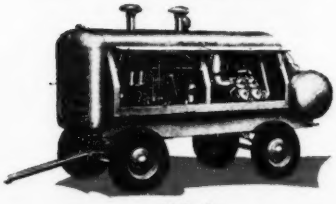


105 cfm

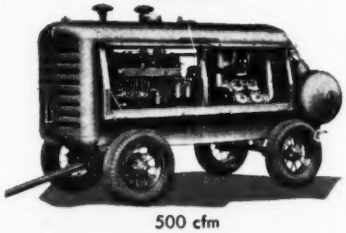
160 cfm



210 cfm



315 cfm



500 cfm

- **HYDRO-SHIFT FLEX-DISC CLUTCH** . . . Finger-tip hydraulic shifter simplifies starting. The clutch is completely self-adjusting, and is the only clutch in which facings can be replaced without major disassembly.
- **DRILL-MORE Multi-Speed Capacity Control** makes Rock Drills and Air Tools work up to 15% faster . . . saves up to 40% in fuel . . . reduces wear on both engine and compressor.
- **IMPROVED CONTROL OF COOLING SYSTEM** . . . Adjustable shutters on radiator and thermostatic control of water circulation.
- **PISTON-TYPE FREE-AIR UNLOADERS** eliminate troublesome diaphragms . . . operate only at half speed.
- **FULL-RANGE AIR FILTERS** automatically maintain their high efficiency at part capacity.
- **HINGED SIDE COVERS** permanently attached, prevent loss and damage.
- **SPRING MOUNTING AND AUTOMOTIVE STEERING** on all sizes.
- **TWO-STAGE AIR-COOLED COMPRESSOR** with Channel Valves and constant-level lubrication.
- **CHOICE OF ENGINES** . . . High-economy gasoline engine or Type "H" oil engine on all sizes . . . International-Harvester easy starting Diesel available on 160, 210, and 315-cfm sizes.
- **ARMORED AGAINST DEPRECIATION** . . . Resistant to break-down, dependable on all kind of weather, and good for many years of hard service . . . easy to operate, service, and maintain . . . tough machines that stay efficient.

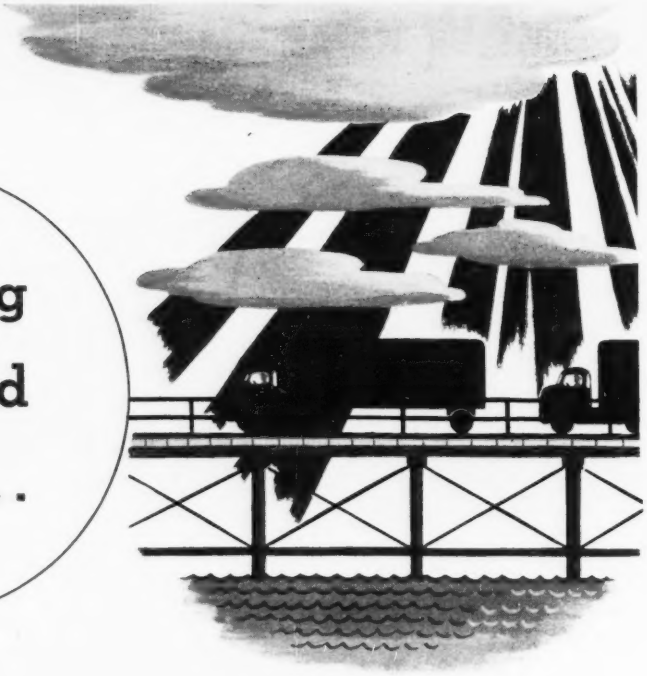
Ingersoll-Rand

11 BROADWAY, NEW YORK 4, N. Y. 330-2

DON'T STOP WITH A GOOD COMPRESSOR!

Use the IR CONTRACTORS COMBINATION

● Everything you need for rock drilling ● Top quality machines that work as a team. ● Machines designed, built, sold, and serviced by men who know rock excavation . . . application "know how."



Carrying the load safely...

on penta chlorophenol treated Planking!

Highway administrators know that PENTAchlorophenol-treated planking can be relied on to carry the load! They know that this scientific, tested wood treatment offers positive, lasting protection even under severe exposure conditions. Also, it reduces maintenance costs on highway and public construction.

Crews who maintain bridges, guard rails, signs and roadside furniture know that wood, given the "PENTA" treatment, is clean and pleasant to handle—paintable, too, if the proper solvent is used.

Insure a longer life for *your* wood construction and practice real economy at the same time by specifying "PENTA"-treated lumber. Ask your supplier about this modern wood preservative—or write for illustrated booklet No. PE 15

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

DOW penta- chlorophenol

Before you plan the DRAINS check with Josam first...

YOU LOWER COSTS

AND COMPLETE CONSTRUCTION FASTER!

The selection of the correct drainage products for any building project may prove complicated and costly... unless you are an expert on drainage. You eliminate the time-work and guess-work *and* save construction costs by submitting drainage problems to Josam. Producing over 800 different types of drains for floors, roofs, roadbeds, pits, and bridges, Josam provides just what you need for any regular or "special" condition. More Josam products are specified by engineers and architects than all other makes combined—proving that it pays to get the details on Josam products first! Send coupon for information on drainage products for the projects on which you are working!

Josam STANDARD OF THE WORLD

JOSAM MANUFACTURING COMPANY

Main Sales Offices, Josam Building, Cleveland 13, Ohio
Manufacturing Division—Michigan City, Indiana
Representatives In All Principal Cities
JOSAM-PACIFIC CO., San Francisco, Cal., West Coast Dstbrs.
EMPIRE BRASS CO., LTD., London, Ont., Canadian Dstbrs.

See our Catalog in Sweets' **Member of the Producer's Council**

FOR IMMEDIATE REPLY...FILL IN AND MAIL COUPON TODAY!
Josam Manufacturing Co., 360 Josam Bldg., Cleveland 13, Ohio
Please send without obligation literature on the following:

☐ Drains for _____ ☐ Swimming Pool Products
☐ Interceptors for _____ ☐ Backwater Sewer Valves

NAME _____
FIRM _____
ADDRESS _____
CITY and STATE _____

K&M "Century" Asbestos Corrugated

for long life without maintenance...

The "new" roof on this industrial building is actually more than 3 decades old! A coal operator installed these "Century" Asbestos Corrugated sheets on a coal tipple 33 years ago before he re-used them here.

for modern architectural effect...

Beauty in typically modern style is brought to this store with a facade of "Century" Asbestos Corrugated. This beauty will *last* without any painting or other expensive upkeep.

You've probably noticed that "Century" Asbestos Corrugated is growing in popularity for decorative motifs...inside and outside...for industrial plants, stores, restaurants, theaters. There's a rugged attractiveness in the simplicity of the corrugations and neutral light-gray coloring.

And perhaps it's no news to you that "Century" Asbestos Corrugated is thoroughly practical from the *structural* point of view. It actually *toughens* with age. Never needs to be painted. Can't rot, corrode, catch fire, or succumb to termites.

NEW "TOP-SIDE" FASTENERS CUT ROOFING COSTS

On top of all this, you can specify the new "TOP-SIDE" Fasteners, and cut a big slice off the cost of roof installation over steel purlin construction. Exclusive with "Century" Asbestos Corrugated, these new fasteners permit roofing to be done entirely from *atop the roof* ...eliminating entirely the costly labor and scaffolding normally required beneath. This feature, alone, is worth looking into—write us for full details.

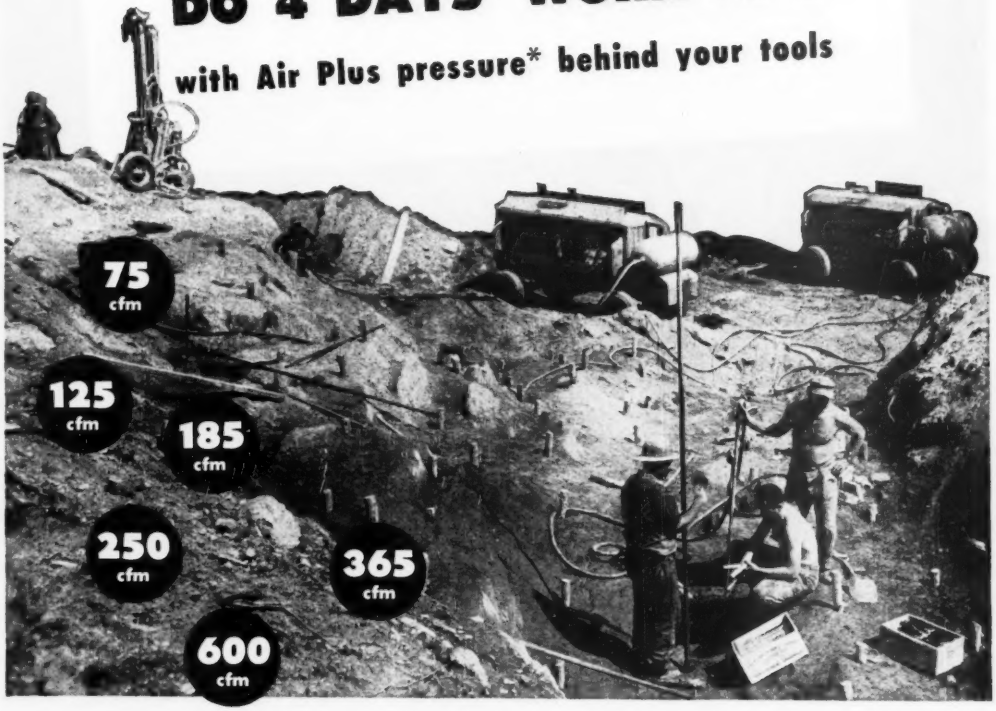
Nature made Asbestos...Keasbey & Mattison has made it serve mankind since 1873

KEASBEY & MATTISON

COMPANY • AMBLER • PENNSYLVANIA

DO 4 DAYS' WORK IN 3

with Air Plus pressure* behind your tools



Jaeger compressor ratings mean steady 90 lbs. pressure

at which tools do 30% to 40% faster work

Drills and breakers, that loaf under weak 70 lbs. pressure from undersized compressors, get up and go to work with Jaeger air power on the job. Jaeger's "new standard" ratings provide the air you need to keep tools working at top pressure, increase their speed an average of 200 blows per minute and put full impact into every blow. *Users will tell you they can do as much work in 3 days as they used to do in 4, with the same men and tools.*

From the Model 75, that runs a heavy breaker at full 90 lbs. pressure, up to the Model 600 that runs two big wagon drills at top efficiency, every "Air Plus" rating is designed to match today's tools. See your Jaeger distributor, or send for complete new Catalog JC-8.

**"Air Plus pressure" means steady 90 lbs. at the tool; requires more air than old 60 to 500 cfm ratings established in 1932.*

THE JAEGER MACHINE COMPANY
Distributors in 130 Cities
Columbus 16, Ohio Cable: BIGANLITLE

JAEGER
engineered equipment
COMPRESSORS • DIAGONAL SCREED FINISHERS
SCREW SPREADERS • BITUMINOUS PAVERS

WHY SHOP FOR A BOILER??

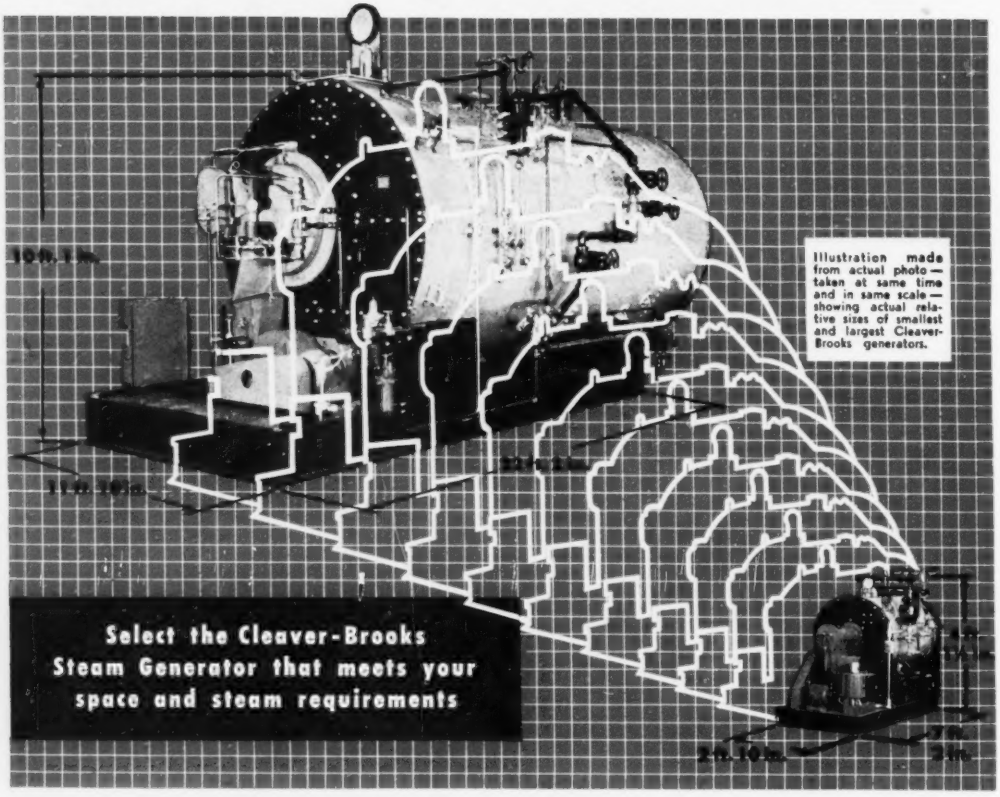


Illustration made from actual photo — taken at same time and in same scale — showing actual relative sizes of smallest and largest Cleaver-Brooks generators.
Select the Cleaver-Brooks Steam Generator that meets your space and steam requirements

WHY search and shop for a boiler — install a Cleaver-Brooks engineered and packaged steam generator that fully meets your steam requirements and needs only a minimum of space and headroom.

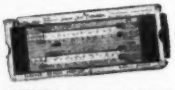
You can select from a range of sizes 15 to 500 hp. — and you can have your Cleaver-Brooks steam generator equipped for oil, gas, or with a combination burner which permits alternate use of gas or oil and provides for a quick change-over from one fuel to the other.

Equally important — you get Cleaver-Brooks guarantee of at least 80% efficiency from full load down to 30% of rating — with either gas or oil as fuel — and IN ALL SIZES.

Cleaver-Brooks steam generators enable you to burn the available fuel in your area — give you clean, smokeless operation—eliminate fuel and ash handling — need no high or costly stacks — no special foundations — fit under low headroom and into limited space — provide flexible operation to meet fluctuating loads — fully meet all codes.

Oil or Gas Fired . . . Guaranteed 80% Efficiency from Full Load Down to 30% of Rating . . . IN ALL SIZES

Available in a size to fit your needs — 15 to 200 p.s.i., 15 to 500 hp.—write for Cleaver-Brooks Steam Generator bulletin.



CLEAVER-BROOKS COMPANY, 389 E. Keefe Ave., Milwaukee 12, Wis.

WRITE on your business letterhead for Free Steam Cost Calculator — a ready reference slide rule showing the comparative steam costs when using oil, gas or coal as fuel.

Cleaver-Brooks

"Packaged" STEAM GENERATORS

HAVE SERVED INDUSTRY FOR MORE THAN FIFTEEN YEARS

At Last! The 3½ Billion Highway Construction Program Is Well Launched! Are You Ready?

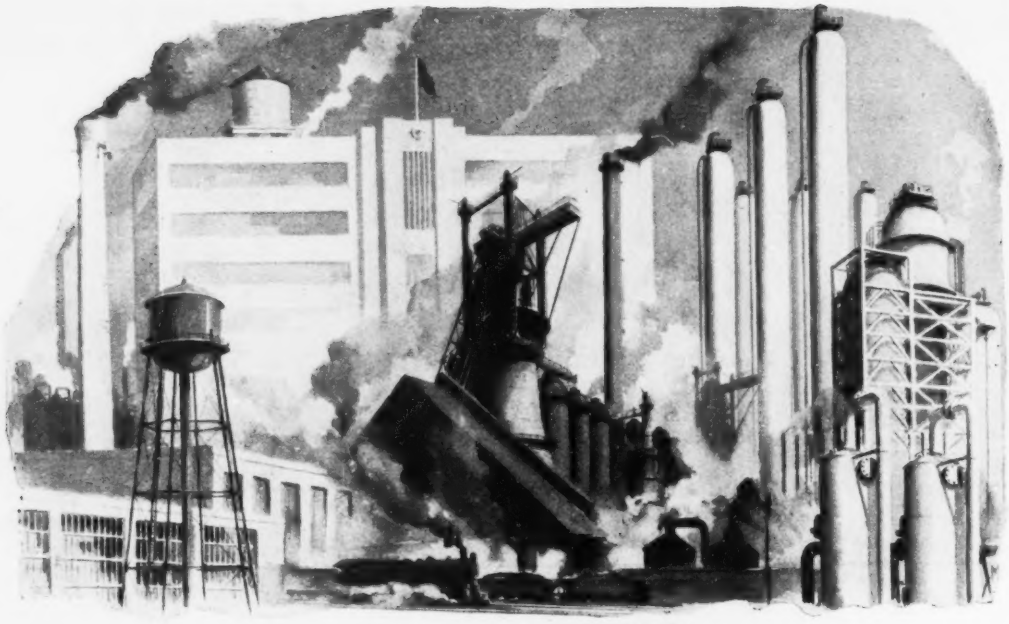
It was a long time in coming, — but today the money is there and it's being spent. Competitive conditions prevail. Awards are going to roadbuilders with the most efficient equipment—and that means Bulk Cement Plants, Aggregate and Cement Batching Plants engineered and built by Butler for your specific work. . . . Have you investigated the new Butler Autobatch Twinbin so vital in solving the problem of irregular cement deliveries? Do you know about the most recent advances in other Butler equipment and in Butler Engineered Design? . . . Either or both of the Bulletins listed below will bring you up to date. Send in your request — today. . . .

Autobatch Twinbin Bulletin

Roadbuilders' Batching Plant Bulletin . . . (Aggregate-Cement)

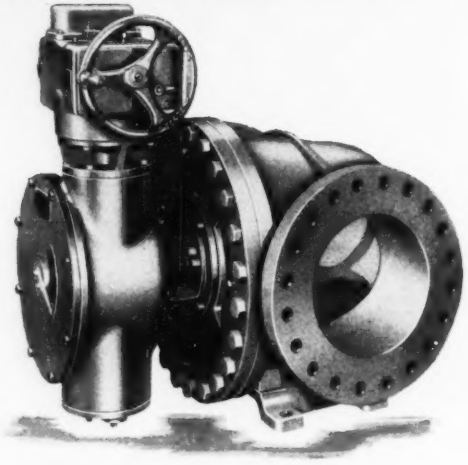
BUTLER BIN COMPANY

WAUKESHA, WISCONSIN



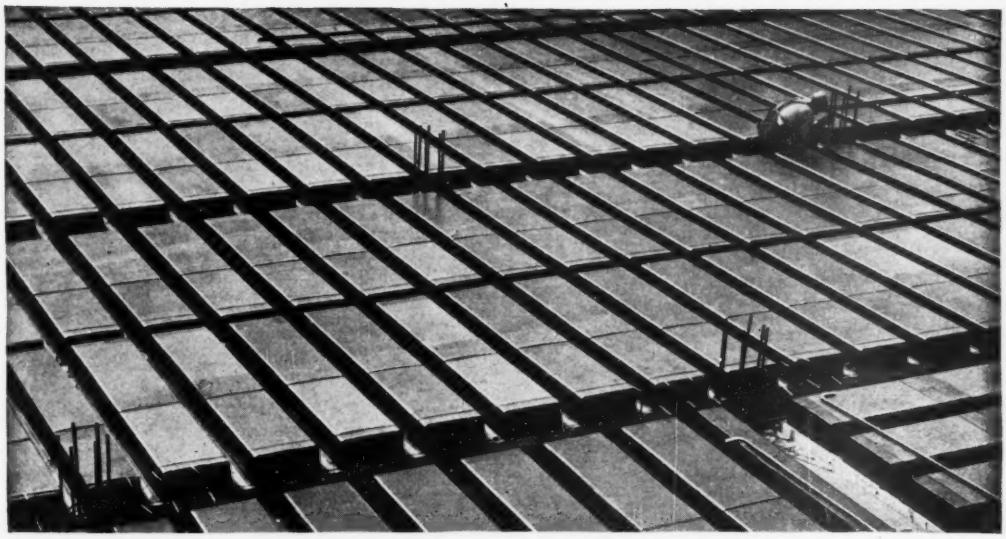
INDUSTRY *and the*
ROTOVALVE

MARCHING toward new goals—in a mechanized manufacturing world — industrialists, engineers, plant managers and management of all kinds are exploring every means of cutting costs and increasing efficiency. This explains the great demand and use of Rotovalves. Their design permits the conical plug to lift, rotate and seat itself, and assures free flow through a full circular opening in both valve body and plug, thereby cutting losses.



Available with either manual, hydraulic or motor control, and in all sizes to fit any industry! *Shipment from stock.* Send for complete data.

S. MORGAN SMITH Co.
YORK. PENNA. U.S.A.



Strength and durability considered,

CONCRETE JOIST CONSTRUCTION

Costs Less!

In these days of high costs, economy in building is important, provided strength and durability are not sacrificed. Here is where concrete joist construction comes in—since it provides rigid, strong, sound-proof buildings which are fire resistive, yet construction cost is lower. That is because the amount of concrete and, consequently, the dead load, are kept to a minimum for any span or live load. The concrete joist and monolithic top slab are formed with cores of removable Meyer steelforms, supported on skeleton centering. Once the concrete has set, the forms are removed and re-used from floor to floor and from job to job. Therefore, a nominal rental charge can be made for each use. Construction is speeded up.

WHY SPECIFY CECO?

Ceco originated the removable steelform method of concrete joist construction. The company is first in the field—actually providing more services than all competitors combined. So, when concrete joist construction fits your need, call on Ceco, the leader over all. Thirty-five years of experience in the field, on the job, have given Ceco a sure grasp of all concrete joist construction problems. This fund of knowledge is yours to command, in 23 strategically located offices from coast to coast.

CECO STEEL PRODUCTS CORPORATION

General Offices: 5601 W. 26th St., Chicago 50, Illinois

Offices, warehouses and fabricating plants in principal cities

Other Ceco Products Include—Reinforcing Steel, Welded Wire Fabric, Steel Joists and Roof Deck, Metal Windows and Doors, Metal Frame Screens, Aluminum Storm Windows, Metal Lath and Accessories

CECO STEEL

In construction products **CECO ENGINEERING** *makes the big difference*

TAKE this MultiFoote Paver with its Elevating Boom out of this picture and run over the methods and equipment you would have to use to accomplish the same thing.

Your MultiFoote, either the Singlemix 34-E Single Drum or the Duomix 34-E Double Drum Paver equipped with the MultiFoote Elevating Boom is a high-speed mobile construction tool. It will travel in under steel or false work. It will place concrete 23 feet up. Its MultiFeed Bucket will deliver either a shovelful, a wheelbarrowful or the whole load and is controlled from the operator's platform.

With the MultiFoote you are equally well equipped to bid on general contracts or road work profitably. Contractors will find that they can, in many cases, eliminate trucks, shooting towers, cranes and other expensive equipment and should give consideration to the MultiFoote and the Elevating Boom on their future jobs. We will be glad to give you details.

...OR A PAVER!

THE FOOTE COMPANY, INC.
Subsidiary of Blaw-Knox Co.
1922 State Street, Nunda, New York

MULTIFOOTE

Duomix 34-E Double Drum • Singlemix 34-E Single Drum

A BLAW-KNOX PRODUCT — FROM FORMS TO PAVER TO FINISHER, ALL YOUR PAVING EQUIPMENT IN ONE PACKAGE FROM BLAW-KNOX

AIRCO ANNOUNCES

The Aircomatic Process... An entirely new idea for welding aluminum in ALL POSITIONS

Sensational in its conception, Airco's new *Aircomatic Process* introduces an entirely different aluminum fabricating technique to industry. With this process, welding of aluminum and weldable aluminum alloys ranging in thicknesses from $\frac{1}{8}$" to 2" plus, may be performed in all positions – flat, horizontal, vertical and overhead. All of the standard joint designs may be welded in these positions.

Single or multi-layer welds can be deposited using either beading or weaving techniques. Vertical welds may be made with either upward or downward travel. In short, all of the facility associated with metal arc welding of steel is made available by this process, plus the advantages of high deposition rates, far exceeding those attained by usual welding methods, which results from continuous filler metal feed and the absence of slag.

This new welding method consists of feeding a bare filler metal in wire form at speeds ranging from 100 to 300 inches per minute through a manually operated gun. The filler metal carries welding current and an arc is maintained between the end of the wire and the work. Power may be supplied from a standard d.c. welding generator. The arc is maintained within a controlled envelope of shielding gas.

THE ADVANTAGES OF THIS TOTALLY UNIQUE AIRCOMATIC WELDING PROCESS INCLUDE:

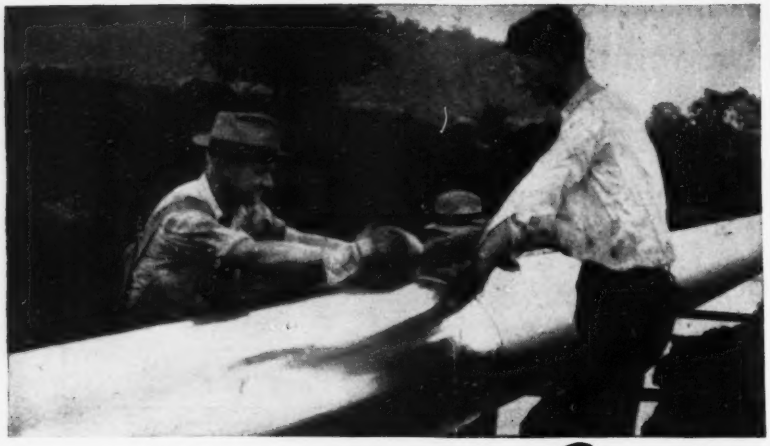
- ...A manual welding process with the essential features of automatic welding.
- ...Continuous deposition of filler metal at high rates.
- ...Manual manipulation of an automatic process for welding in a vertical and overhead position.
- ...High quality weld metal deposits.
- ...Minimum edge preparation owing to deep penetration.
- ...Ability to weld heavy sections with little or no preheat.
- ...No flux required; slag removal eliminated.
- ...Visible arc; no blind welding.

Investigate the many advantages the new Aircomatic Welding Process *offers you. For equipment, price, service or other pertinent information, call or write our nearest office.*

AIRCO **AIR REDUCTION**

Offices in Principal Cities

Headquarters for Oxygen, Acetylene and Other Gases . . . Carbide . . . Gas Welding and Cutting Machines, Apparatus and Supplies . . . Arc Welders, Electrodes and Accessories



There is a combination of NO-OX-ID and NO-OX-IDized Wrapper for every soil condition. The high dielectric strength of the combination effectively insulates the pipe.

Speedy Labor Saving Way

TO PROTECT YOUR PIPE AGAINST CORROSION

In addition to the speed with which NO-OX-ID can be applied, it offers sure and certain long-time protection against pitting and corrosion. For over 25 years, NO-OX-ID and NO-OX-IDized Wrappers which are impregnated with NO-OX-ID have been used to protect the pipe lines of America.

If the pipe is new, NO-OX-ID and NO-OX-IDized Wrappers can be applied at the mill or pipe yard. If the line is to be reconditioned, work can be done out in the field. The ultimate result is the same . . . all moisture is sealed out; all underfilm corrosion inhibited.

Method of Application

NO-OX-ID can be applied hot or cold; by hand, traveling, or stationary machine. NO-OX-IDized Wrappers prevent soil attachment; resist shearing action.

Where Work Is Done

Since the application can be made on location or in the pipe yard, you can adopt the method best suited to your needs and your available labor.

Coating and wrapping machines applying NO-OX-ID and NO-OX-IDized Wrapper to new transmission lines in the field where pipe is laid.

NO-OX-ID
IRON + OX = RUST
REG. TRADEMARK
AUG. 27, 1918

The ORIGINAL RUST PREVENTIVE

Dearborn Chemical Company
Dept. ER, 310 S. Michigan Ave., Chicago 4, Ill.
New York • Los Angeles • Toronto

TO GO TO firm strata AT GREAT DEPTH . . .

you can't beat steel

STEEL IS STRONG... STEEL LASTS LONG

● In U·S·S Steel H-Beam Bearing Piles, engineers have found lasting safety and economy for every type of foundation job. On large jobs and small, in fresh and salt water, under buildings, bridges and viaducts, these strong, permanent, easily driven H-Beam piles have proved their ability to provide a secure means of supporting foundations through unstable materials of great depth.

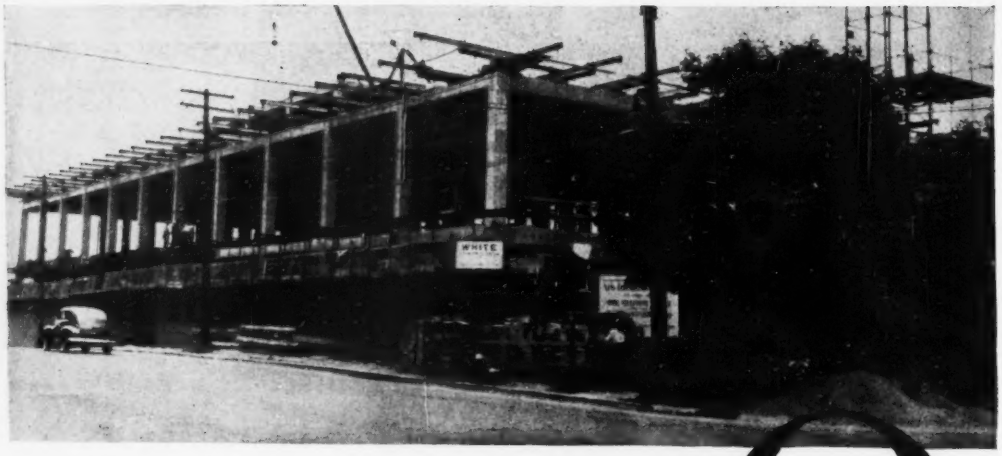
Their capacity for high unit loads, both vertical and horizontal, permits fewer piles and fewer driving operations for a given load. U·S·S Steel H-Beam Bearing Piles are readily handled in the field by ordinary equipment, are easy to splice, eliminate jetting and withstand rough handling.

CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH & CHICAGO
COLUMBIA STEEL COMPANY, SAN FRANCISCO
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
UNITED STATES STEEL EXPORT COMPANY, NEW YORK
9-122

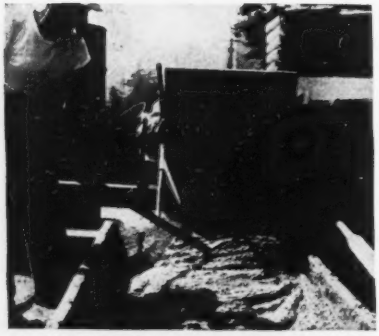
USS

STEEL H-BEAM BEARING PILES

UNITED STATES STEEL



Quality with a Capital Q



LONE STAR CEMENTS FROM SOUP TO NUTS— QUALITY ALL THE WAY THROUGH

Telephone Buildings are designed with quality the sole arbiter. This new structure at West New Brighton, Staten Island, N. Y., is a case in point. Working on a schedule which ticked like a well-regulated watch, 'Incor' 24-Hour Cement was used in retaining-wall construction to permit quick back-fill. During cold weather, in frame and floor concrete, 'Incor'* reduced freezing risk and cut heat-protection costs by better than 50%. In all other concrete, where time was not a factor, Lone Star Cement was used. Matching the quality of the concrete is the brick masonry, in which Lone Star Masonry Cement was used to produce clean, smooth, moisture-proof joints.

Lone Star Cements meet every construction need. Use 'Incor', where dependable high early strength reduces form, time and cold-weather costs . . . elsewhere, use Lone Star Cement. For mortar, use Lone Star Masonry Cement. Selective use of Lone Star Cements means maximum quality at minimum cost. *Reg. U. S. Pat. Off.

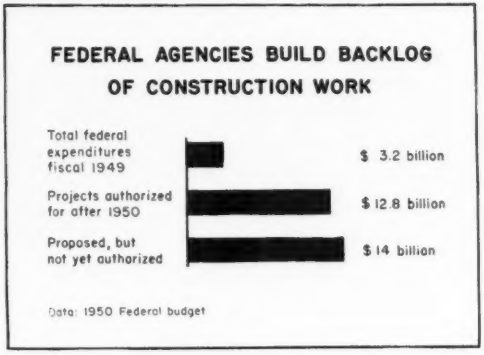
NEW YORK TELEPHONE COMPANY BUILDING, Forest Ave. and Hart Blvd., West New Brighton, S. I., N. Y.; WHITE CONSTRUCTION COMPANY, New York—Contractor; VOORHEES, WALKER, FOLEY & SMITH, New York—Architects & Engineers; LONE STAR Cements supplied by BRIGHTON MATERIALS COMPANY, Inc., West New Brighton, S. I., and SPRINGSTEAD COAL CO., Inc., Great Kills, S. I.

LONE STAR CEMENT CORPORATION

Offices: ALBANY • BETHLEHEM, PA. • BIRMINGHAM • BOSTON • CHICAGO • DALLAS • HOUSTON • INDIANAPOLIS • JACKSON, MISS. KANSAS CITY, MO. • NEW ORLEANS • NEW YORK • NORFOLK • PHILADELPHIA • ST. LOUIS • WASHINGTON, D. C.

LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 15 MODERN MILLS, 27,000,000 BARRELS ANNUAL CAPACITY

CONSTRUCTION TRENDS


FEDERAL AGENCIES BUILD BACKLOG OF CONSTRUCTION WORK
Total federal expenditures fiscal 1949
$ 3.2 billion
Projects authorized for after 1950
$ 12.8 billion
Proposed, but not yet authorized
$ 14 billion
Data: 1950 Federal budget

The U. S. government is going easy on construction in the year beginning June 30.

It will spend $3.2 billion—but that won't even make a start on a backlog of $27 billion worth of work being piled up by federal agencies.

The federal budget, released recently, shows that the government has $12.8 billion worth of projects, already authorized in general or specifically by Congress, on which it will not start work until after June 30, 1950.

Another $14 billion worth of work includes projects like the St. Lawrence Seaway, which have been proposed but not yet authorized. This total includes only federally-financed work—nothing from states or municipalities.

Never before in peacetime has the U. S. had anything like that volume of work in reserve.

Many of the projects are now in the planning stage. The volume of planning, too, is something new. It is certainly far different from the situation in the mid-1930's. Then it took 18 months or more to get started on projects set in motion primarily to provide jobs.

Because federal work is piling in at such a rate now that the government fears it will put an undue strain on supplies of men and materials, the President's budget calls for starting only a minimum of new projects in fiscal 1950.

But, even though the Administration is holding back, federal expenditures will set a postwar record next year. The reason rests largely in the requirements of huge long term projects upon which no more than a fair start has been made.

Estimates of expenditures by fiscal years show total civil works, including loans and grants and national defense outlays, rising from $2.7 billion in 1949 to $3.2 billion in 1950. These are actual expenditures, as estimated in the budget. They are not new appropriations, which, as ENR reported last month, are expected to amount to some $2.2 billion. Outlays in fiscal '50 will be half again as large as requested appropriations because agencies are carrying over millions appropriated by earlier Congresses.

What's in that backlog?

Almost three-quarters of the $12.8 billion reserve is in programs of the Corps of Engineers and the Bureau of Reclamation, and in the Forest Service program for roads and trails. Some of these, as planned now, will extend over 10 to 20 years.

Biggest single chunk of this backlog is $3.5 billion of work planned by the Bureau of Reclamation. Flood control work by the Army calls for $2.7 billion worth of construction. Rivers and harbors will take $1.1 billion, and the REA program totals $1.5 billion.

In the $14 billion of proposed, but not yet authorized work, river projects are the most important items. Reclamation has a total of $3.6 billion of multi-purpose irrigation and power projects and the Engineers have $3.1 billion of river and harbor and flood-control work among their recommendations.

Blueprints for all the $27 billion of projects are in varying stages, of course. The Corps of Engineers, for example, will have, as of June 30, 1949, an estimated $100 million of work completely planned and some $1.6 billion worth in the planning stage. Other agencies have a large volume of work on which plans are being developed. However, there is as yet no large organized reserve of work fully planned.

In addition to blueprints, federal agencies are driving hard to get basic data, such as detailed topographic maps, for planning. The budget provides for continuing this work, undertaking preliminary examinations and surveys, and preparing detailed plans and specifications for projects.

The 1950 budget provides, for example, some $21 millions for topographic mapping and geodetic control surveys. This is about 40 percent more than will be spent in fiscal 1949 for this work. The budget also includes about $12 million for surveys, chiefly of the river basins, which will be used both for construction and for such agencies as the Park Service, Fish and Wildlife Service, and Public Health Service.

All this shapes the dimensions of a huge backlog of work ahead of the construction industry. Never before has the industry had such a comprehensive measure of the government's needs and plans for construction.

STEEL ALLOCATIONS

and

What We Are Doing About Them

As you know, the Steel Products Advisory Committee recently agreed to a six month extension of voluntary allocations of steel for most industries already included in the allocation program—and the President has now asked for authority to establish priorities and allocations for key materials in short supply. On the face of it, this action and stepping up of steel requirements for defense and the Marshall Plan point toward a continuation of peak demand for steel.

But remember that steel distributors in general and Ryerson in particular will always be in there battling to make available to you the largest possible tonnage. Last year Ryerson was able to serve over 50,000 manufacturers, builders, and utilities. This year we expect to serve many thousands more.

Since it's our job to provide steel from stock, we never consider that we are doing you a favor when we take an order. Instead, we count ourselves fortunate to be able to supply what steel we can, to help keep the wheels of industry turning.

We may not always have exactly what you ask for, but our experienced steel men can usually suggest a practical alternate. So we urge you to get in touch with us whenever you need steel.

Joseph T. Ryerson & Son, Inc. Plants at: Chicago, Milwaukee; Detroit, St. Louis, Cincinnati, Cleveland, Pittsburgh, Philadelphia, Buffalo, New York, Boston, Los Angeles, San Francisco

RYERSON STEEL

Large Stocks of Carbon, Alloy and Stainless Steel for Prompt Shipment

THE CONSTRUCTION WEEK

NEW CHIEF OF ENGINEERS—Time is running out on the extra year that Lt. Gen. Raymond A. Wheeler agreed to stay on as Chief of Engineers, and speculation is beginning on his successor. Who it will be will be determined by the President and the Secretary of the Army from a list of candidates submitted by a special board of officers. Such a board has not been appointed and won't be until General Wheeler puts in another request for retirement. In the meantime, he is being talked of for the position of chief engineer of the International Bank for Reconstruction and Development, generally known as the World Bank.

ALASKAN SPEEDUP—Military construction in Alaska will hit a fast tempo this summer. The Corps of Engineers will receive bids in the next three months on a variety of construction projects to cost nearly $30,000,000. Work will include housing for troops and their families, airport improvements, new railroad and dock work, storage depots and powerhouses.

DO THEY MEAN IT?—Washington's best answer at the moment on whether Russia will clamp down on its shipment of manganese and chrome to the U. S. is "maybe". Soviet agents recently told U. S. importers that "increased demand at home" might make it impossible to deliver full quotas to the U. S. steel industry—and the U. S. now gets 35 percent of its manganese and 40 percent if its chrome from Russia. Washington pooh-poohs the idea that Russian industry can take anything near the full production of chrome and manganese, and sees the move as a Russian trial balloon in an attempt to get U. S. businessmen to pressure for relaxation of export controls to Russia.

THAT NAME AGAIN—Now that a Democratic Congress is seated, another round in the naming of the big dam in Boulder Canyon may be due. The dam has now two names—one for each end. Nevada changed the name of its end along with the 80th Congress, when it changed the name from Boulder to Hoover Dam. But Arizona, which has a state law forbidding changes in place names, stuck to Boulder Dam for its end. And there's still Boulder City, Nev., and even the Boulder Dam Boy Scout Council to be considered if any more name changing is planned.

TUNNEL RECORDS TOPPLE—The recent six-day progress record of 206 ft,, set by Morrison-Knudsen near Oroville, Calif., has been broken by the Walsh Construction Co. with a drive of 211 ft. on the other end of the same tunnel (25-ft. horseshoe section through solid granite).

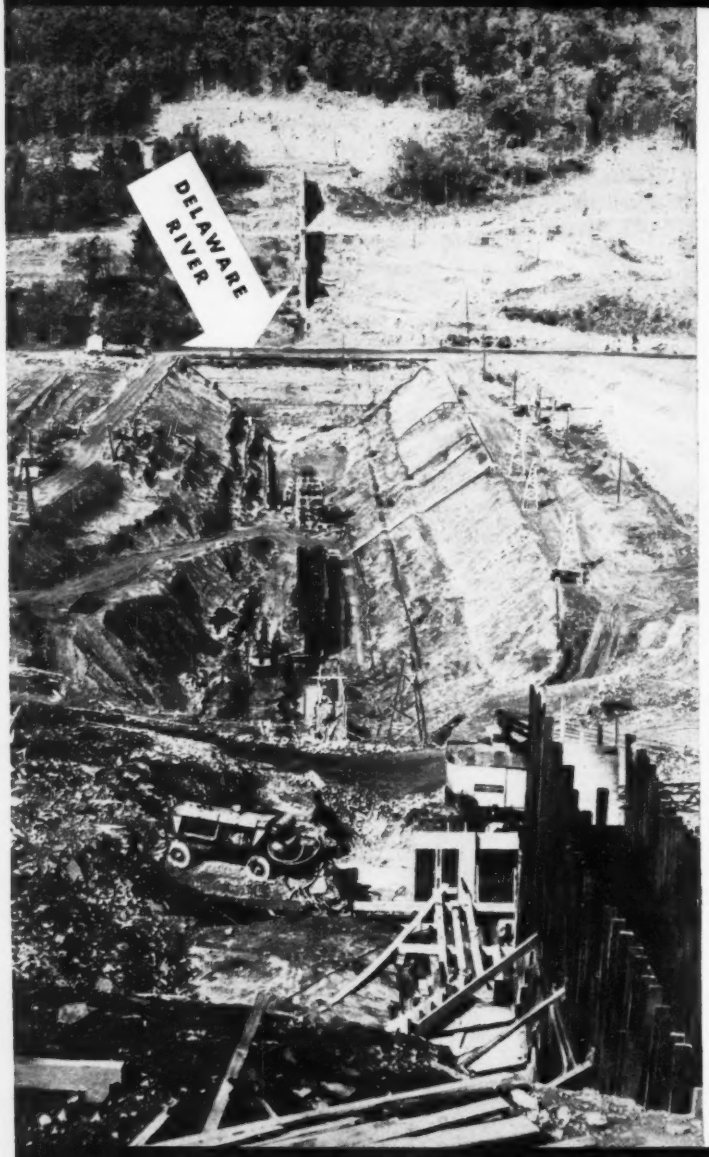
STEEL VS. CONCRETE — Undisguised pleasure is evident in steel construction circles over the fact that competitive bidding between steel and concrete for the big new hangar at New York's Idlewild airport went to steel. Five contractors bid steel, two concrete. Stock Construction Co., New York City, got the contract for $4,212,865, which was nearly $121,000 under the lowest concrete proposal. Steel people see in the award a return to normal for this type of structure, departure from which, they say, occurred only because steel was diverted to war purposes.

LABOR SEEKS WELFARE—With chances dimming for further sizeable wage increases, labor leaders are driving for gains in the field of welfare for their members. One prong of this drive is directed at improvements in U. S. social security status, such as the Murray-Wagner-Dingell health bill that would provide a system of health insurance covering 125,000,000 persons, and measures for old age insurance increases; the other is a plan for employers and workers to build retirement programs within industry, to supplement any governmental security gains.

ECA TAKES OVER IN KOREA—The ECA will take over the Army's recovery program in Korea, which runs out June 30, 1949, and then institute a system similar to ERP. Arthur C. Bunce is chief of the ECA mission in Korea; Edgar A. J. Johnson heads up the Korea program division in Washington.

ITALIAN JOBLESS AIDED—Some $35 million has been released from ECA counterpart funds for reconstruction projects in southern Italy. ECA doesn't say so, but the projects are secondary to the fact that thousands of otherwise unemployed will be given jobs. Here's how the money will be spent: Naples, a 1,500 million lire drydock, 1,300 million lire for a petroleum dock, and other money for aqueduct construction throughout southern Italy; Sicily, 5 billion lire, of which 1,200 million lire is for workers' houses; Sardinia, 1,201 million lire, for roads and modern improvements; Elba, 146 million lire for roads and workers' houses. Rest of the money will be used for sewage systems, municipal water supplies, etc.

Speaking of dry jobs–



Here's
DOWNSVILLE DAM
in New York State
where a
MORETRENCH
WELLPOINT
SYSTEM
Controls
60'
of Water!

MORETRENCH CORPORATION

90 West St.
New York 6

3037 S. Christiana Ave.
Chicago 23, Illinois

7701 Interbay Blvd.
Tampa 9, Florida

315 W. 25th St.
Houston 8, Texas

Rockaway
New Jersey

To Be Resisted

PULLING NO PUNCHES, the Committee on the Advancement of Sanitary Engineering of the American Society of Civil Engineers has clearly expressed its concern over efforts to split-off public-health engineering from sanitary engineering on the basis of differences in educational requirements. This abortive effort, says the committee, is a threat to the unity of sanitary engineering and should command the attention of the entire society. Pointing out how public health authorities in recent years, armed with funds from the Social Security Act, have promoted programs of instruction in universities, the committee finds that these are wholly inadequate from an engineer's point of view. The result has been that non-engineering graduates have had no difficulty in mastering the subject matter of instruction and are often admitted to the same graduate degrees as engineers. Such degrees, concludes the committee, obviously have no basis in fact in engineering, and the result can easily be a dilution of the professional status of the sanitary engineer. Left to their own devices and decisions, most sanitary engineering educators, we feel sure, would not countenance this dilution. No group is more devoted to the welfare and the advancement of the profession at large. And none in the educational field more often go beyond their academic halls to work side by side with the men they have trained. They know what sanitary engineering encompasses, and would agree that the committee presents a sound argument. It is an argument, moreover, that should concern not only the ASCE, but other groups as well who seek to maintain the high standards of the engineering profession.

Packaged Garbage?

NEW TECHNIQUES are needed to facilitate handling of greatly increased quantities of garbage and refuse cast off under crowded living conditions in large cities. Replacement of the too-often unattended garbage can with a more efficient container would be a step forward. Never are there enough cans, and refuse overflows onto the street; they tip over and spill the contents; they are often awkward and heavy to handle. What is needed to improve collection is a rugged, five-for-a-cent, moisture-proof, disposable paper bag with a taped seal. Such a bag could be suspended indoors in a waste-basket-like container with a pedal-operated cover; sealed when full; easily placed at the curb; and readily thrown onto collection trucks by pick-up laborers. Size of the bag should be determined on the basis of rubbish contributed per family and frequency of collections. Perhaps several sizes should be marketed to meet varying demands in specific communities. The sealed container would solve two problems. It would preclude scattering and facilitate handling of wastes. Here is an opportunity for sanitation experts and container manufacturers who pioneered the food-packaging industry to carry out a combined educational operation that will cut refuse collection costs and promote cleaner living areas.

Little Snow Storms Hurt Too

BIG SNOW STORMS, with their widespread crippling of traffic, destructive forces and human suffering make headline news—but the frequent small storms can total up just as much damage to urban traffic and intracity commerce. Tardiness in promptly starting snow removal and ice-control at the beginning of a storm results in traffic accidents reaching unbelievable numbers. Transportation soon gets snarled, industry is faced with help shortages and business suffers materially. Much of this general traffic confusion, with its resultant economic loss, could be avoided by better timing of ice-control and snow removal. Dangerous intersections and steep grades should be sanded without delay, and snow removal should be started before the storm gains the upper hand. Since snow storms are becoming no worse while snow-fighting equipment is being constantly improved, we are in a position to do a better job. It therefore appears that better timing of operations and better training of those charged with the responsibility of fighting snow and ice offer the ultimate answer in keeping our streets and highways open for the orderly and safe flow of winter traffic.

Still Too Few Engineers

STATE HIGHWAY DEPARTMENTS continue to lack engineers for proper prosecution of their work. Hal Hale, executive secretary of the American Association of State Highway Officials told the ASCE last week that the shortage is as much as 40 percent in the professional grades of employees. One reason for this shortage is that too many salaries in highway work are out of line with what is being paid elsewhere. Also, as we pointed out last week, too-low salaries in the upper brackets is not conducive to the retention of young men after they have had enough training to be really useful. But probably as great a handicap to building a highway department staff is a widespread impression, especially among the advisors of college boys, that politics still play too large a part in highway employment. This is a condition that cannot be corrected quickly or easily. But it will not be corrected at all unless more people outside the highway departments take an interest in putting these departments on a better footing.

DURAPLASTIC fortifies concrete against effects of freezing and thawing

● Millions of square yards attest that concrete pavement made with Atlas Duraplastic air-entraining portland cement better withstands the effects of winter's claws and is highly resistant to the bite of de-icing salts. Here's why:

When Duraplastic is used, less mixing water is needed for a given slump, yet the mix is more plastic, and bleeding and segregation are minimized; the concrete is fortified against the effects of freezing-thawing weather and made highly resistant to the scaling action of de-icing salts.

Atlas Duraplastic provides the proper amount of entrained air interground with the cement for satisfactory field performance. It conforms with ASTM and Federal specifications and sells at the same price as regular cement. Write for further information to Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building, New York 17, N. Y.

OFFICES: Albany, Birmingham, Boston, Chicago, Dayton, Des Moines, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.

ENR-D-82

ATLAS DURAPLASTIC

TRADE MARK REG. U. A. C. CO.

AIR-ENTRAINING PORTLAND CEMENT

MAKES BETTER CONCRETE AT NO EXTRA COST

"THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—ABC Network*

ENGINEERING NEWS-RECORD

FEBRUARY 3, 1949 VOL. 142 NO. 5

Truman orders staff to draft Columbia Valley legislation

Charles S. Murphy named by President to coordinate studies of all agencies assigned to help draw Northwest river development bill—Sides shape up for long fight

President Truman gave the orders last week that put key staff and Cabinet members to work at drafting legislation to create a Columbia Valley Authority.

Charles S. Murphy, an administrative assistant of the President, is to coordinate activities of the group assigned to draw the CVA bill. Under White House orders, he will assimilate recommendations of the Corps of Engineers, Interior and Agriculture departments, Budget Bureau, Federal Power Commission, and the Council of Economic Advisors. All are to report in "a few weeks."

Chances for a CVA bill to get through Congress this year appear about even, with adherents and opponents of the project already counting noses. It is evident that the fate of the proposal hinges upon several imponderables. Most important of these are the following:

1. Will the President continue to press for CVA? As of today, he apparently is inclined to do so, though he may be forced to divert his attention and the prestige of his office to more important affairs. The Pacific Northwest—even if it were unanimously in favor of CVA—has neither the votes nor the prestige in Congress to win the battle without all the outside support it can muster.

2. Will the Northwest itself support the proposal? In the past, the region generally—excepting some minor political groups—has been strong for resource development, suspicious of the valley authority concept. Now the area's labor and most of its farm organizations are favoring CVA. Opposed probably will be the electric utilities and other industrial interests. Political leaders in Republican Oregon are preparing to lead this opposition.

3. What will be in the Truman CVA bill? The President has put several agencies, including the major bureaus now developing Northwest water resources, to work on proposed legislation to present to Congress. Their recommendations are likely to be patterned only partially along the lines of the present Tennessee Valley Authority set-up. The four states—Washington, Oregon, Idaho and western Montana—to be included in the CVA area will demand a voice in both the formation and operating organization to be set up. Water rights, never a serious question in the Tennessee Valley, must be recognized by any authority doing business in the Northwest. Omission of these or other equally important considerations can doom the CVA before it is even born.

Rep. Hugh Mitchell, Washington Democrat, who is the author of proposed legislation to create a CVA closely patterned on TVA, probably will lead the fight in the House.

The federal agencies given the job of drafting legislation are just organizing staffs for the purpose. Only the Interior Department, where Assistant Secretary C. Girard Davidson has been named to cooperate with presidential assistant Murphy, has taken any mechanical steps toward carrying out the White House directive.

But, thinking among the agency policy-makers likely to work on the legislation is already taking form.

Electric utilities had not decided on a definite policy toward the President's proposal early last week. P. L. Smith, President of the National Association of Electric Companies, in a cautious statement, asserted his doubts as to whether the people of the Northwest "favor a valley authority." He added that a "vote on the subject" should be taken before Congress acts on the matter.

Drive started for low-cost housing

Government, business and labor have teamed up in a drive to produce more low-cost housing in 1949. National leaders of all branches of the industry met in Washington recently to put the final touches on plans for a nationwide campaign to get under way immediately.

Plans call for local joint meetings of all interested groups in cities of more than 10,000 population throughout the country during February and March—in time for the beginning of the spring building season. The program aims to stimulative private financing and building of more housing units in the lower cost brackets, for sale and for rent.

In its makeup, the Washington planning conference foreshadowed the comprehensive backing expected for the local meetings. The national gathering included spokesmen for financial and investment interests, building materials producers and dealers, homebuilders, construction labor, architects, general contractors, real estate brokers, chambers of commerce, mayors, and all government agencies in the housing field.

State and district offices of the Federal Housing Administration are making preliminary arrangements for the country-wide meetings, but local producer-lender-labor committees will be the sponsors in charge of the individual events.

Behind the drive, in addition to the government agencies, are the National Association of Home Builders, the Producers' Council, the Associated General Contractors, the Building Construction Trades Department of the AFL, the American Institute of Architects, the Prefabricated Home Manufacturers Institute, the National Retail Lumber Dealers Association, the U. S. Chamber of Commerce, the U. S. Conference of Mayors, the American Bankers and Mortgage Bankers Associations, savings and loan leagues and insurance companies.

National planning for the drive has been worked out by all the participating groups under the leadership of Raymond M. Foley, administrator of the Housing and Home Finance Agency.

NEWS BRIEFS

Highways—Preliminary plans by H. W. Lochner & Co. for a 10-block bypass highway in NASHVILLE, TENN. have been approved by the state highway department and PRA . . . Three highway construction projects to cost about $30,000,000 are being considered for CAPE COD, MASS. According to W. H. Buracker, public works commissioner, the state will need to spend $750 million in ten years on its highways . . .VIRGINIA State Highway Department has a new plan whereby contractors must agree that if work within the limits of highway right-of-way is not completed in a satisfactory manner the department may finish the job at the contractor's expense.

Bridges—PHILADELPHIA, PA., takes bids Jan. 19 on the $1,000,000 Walnut Lane bridge . . . On Jan. 25 bids will be opened for the superstructure of the $40,000,000 Delaware River Memorial Bridge near WILMINGTON, DEL. . . . A bridge is planned at PORT ORANGE, FLA., to consist of causeway and bridge construction. The fill-in type of causeway will be 4136 ft. long and the swing-type draw will be 374 ft. . . . On Jan. 12 there were ceremonies marking the start of construction on the $37,500,000 Chesapeake Bay bridge at SANDY POINT, MD. . . .A $20,000,000 ferry and bridge program in Tidewater Va., is becoming an actuality after the Supreme Court's decision that special revenue bonds are constitutional. An early start on the York River Bridge at YORKTOWN is planned by the State Department of Highways together with the purchase of the James River Bridge system in the NEWPORT NEWS-PORTSMOUTH area and construction of a bridge across the lower Rappahannock at GREY'S POINT in Middlesex. Purchase of the Chesapeake Ferries which cross Hampton Roads between OLD POINT and WILLOUGHBY and NEWPORT NEWS and NORFOLK already has been effected by the department.

Housing—Work is under way at HOUSTON, TEX. on a 300-unit, $2,500,000 home building and shopping center by Plumb Mitchell, Inc. . . . The Tishman Realty & Construction Co. is to build a $10,000,000 family garden apartment house for 1000 families on a 10-acre tract in the Rego Park section of QUEENS, N. Y. Ten six-story buildings covering only 27 percent of the gross plot area will be started in March; Kelly and Gruzen are architects on the buildings . . . McCloskey & Co., PHILADELPHIA, announced it will build 300 additional homes at its Academy Gardens development, bringing the total cost to $9,000,000. . . . A $3,200,000 apartment development will be built near WILMINGTON, DEL., by Edwards and Green of Camden, N. J. . . . BOSTON, MASS., expects to put an end to its housing shortage in 1949. At least $150,000,000 worth of new housing will be under construction this year to provide for more than 10,000 families in the rental bracket between $45 and $60 a month. . . . A new residential development in INDIANAPOLIS, IND., to be known as Brookville Village, will consist of 170 prefabricated two-bedroom houses to sell at approximately $6,000 each is planned to start at once. . . . A $7,500,000 multiple-story, 795-unit apartment development is planned for SOUTH ALEXANDRIA, VA. Work is to begin about Feb. 15, but no contracts announced yet. . . . A $5,166,000 home building project of 492 units will be built in the Oak Forest subdivision of HOUSTON, TEX. by Brace & Carruth of Houston. . . . In EDMONTON, ALTA., plans are being drawn for a housing plan of nearly 3,000 units. . . . This spring a $1,500,000 business center will be constructed as part of the $5,500,000 Meadowbrook development at INDIANAPOLIS, IND. Allen & Kelley is directing design and construction of the project rapidly nearing completion. . . . In New York City nine new public housing projects will be started within the next four months to accommodate 9,500 low income families. . . . A $30,000,000 plan for construction of 4,000 low cost homes in MONTGOMERY COUNTY, MD., has been announced by the owners of the 576-acre tract.

Starting salaries increase 11 percent for engineers

Starting salaries for graduates of the New York University College of Engineering increased in 1948 by 11 percent over the previous year, according to a recent survey, John A. Hill, director of student personnel and admissions at the college, reports.

Questionnaires were sent to 365 graduates of the class of June, 1948.

The average starting salary was $252 a month, an increase of $25 over the 1947 average. The largest starting salary increase—16 percent—appeared to be in the aeronautical and administrative engineering fields.

A summary of the change in monthly starting salaries in six chief engineering fields follows:

	1947	1948
Civil engineering	235	255
Chemical engineering	235	264
Mechanical engineering	228	256
Electrical engineering	238	251
Aeronautical engineering	211	245
Administrative engineering	198	230
Average	227	252

Of the 177 graduates who replied, 72 percent took jobs in private industry, 16 percent went into civil service posts, 9 percent enrolled for graduate courses and 3 percent were classified as miscellaneous.

In answer to the question, "How did you find your job?" 24 percent listed the New York University placement bureau; 11 percent, the College of Engineering faculty; 26 percent, personal inquiry; 15 percent, family and friends; and 24 percent, newspaper, agency or engineering societies. Only three former students, or 1.7 percent, were recorded as unemployed.

DESIGNED LIGHTING INSIDE AND OUT effectively illuminates the futuristic features of the new Los Angeles office of the Prudential Life Insurance Company of America. A combination of 82 floodlights was used. Architects Wurdeman and Becket designed the building and William Simpson Construction Co. was the general contractor.

Deschutes River power project planned

Private power in the Pacific Northwest, forced into the background in construction of generating facilities by expanding federal development, has stepped up in the area's current power shortage with plans for a $12,000,000 hydro development.

Though overshadowed in this week's news of the President's CVA plans (see p. 47), the project, on the Deschutes River in central Oregon, would turn out 75,000 kw by the winter of 1950-51—at least four years before McNary Dam can be brought into production. It would ultimately produce 112,500 kw. Application for a preliminary permit for the development, to be known as the Pelton project, has been filed with the Oregon State Hydroelectric Commission.

The Pacific Power & Light Co., Portland General Electric Co. and Washington Water Power Co., who announced the development, will contract for the entire output of the new plant.

Articles of incorporation for the new enterprise were filed under the name of Northwest Power Supply Co., *not* a subsidiary of the three sponsoring companies. Gen. Thomas M. Robins, retired Army engineer who directed construction of Bonneville Dam, is president of the firm. Other incorporators include Howard W. Turner, Madras, Ore., vice president, and Hillman Lueddemann, Portland, secretary-treasurer.

Concrete arch planned

Plans call for a dam of arch construction in an 800-ft. canyon 6 mi. northwest of Madras, 200 ft. high from foundations to crest, with an average width of about 200 ft. Width at the bottom of the canyon would be only 150 ft., tapering to about 500 ft. at the crest of the structure. About 85,000 cu. yd. of concrete would be used in the construction.

Tentative orders totaling more than $2,400,000 already have been placed for all major items of electrical equipment and turbines required for the development. This was done to gain a place in production schedules of manufacturers.

The announcement of plans for the project brought immediate opposition from fishing interests, which charged that the dam would hurt salmon spawning and would disrupt the federal government's plan to develop a fish hatchery on the Metolius River, a Deschutes tributary. A bill, approved by the state fish commission, now before the legislature, would prohibit further construction of dams in the Deschutes.

Anticipating these objections, the sponsors of the project have proposed construction, subject to approval by conservation agencies, of a modern fish hatchery downstream from the damsite, to be operated by the state, as a necessary feature of the whole development.

To be located on federal land, the project will sidestep provisions of an Oregon law permitting the state to take over private development with two years' warning.

USBR dam in Colorado finished 18 months early

More irrigation water for spring crops will flow to farmers on the Mancos project, in southwestern Colorado, as a result of completion of the Jackson Gulch dam by the Vinnell Co., Alhambra, Calif., 18 months ahead of schedule.

Commissioner of Reclamation Michael W. Straus said a $1,925,000 contract for the dam and inlet and outlet canals had been awarded April 17, 1947, to the Vinnell Co. Notice to proceed followed on May 26, 1947. The contractor completed the job Dec. 16, 1948.

Construction took only 567 days of the 1,150 allowed under the contract. The work was finished a little more than a year and six months ahead of the scheduled date of July 22, 1950.

Jackson Gulch dam is a rock-faced, earth-fill structure, 181 ft. high, with a reservoir capacity of 10,000 acre-ft. A feeder canal 2.65 miles long will convey waters of the West Mancos River to the reservoir. The storage will be returned to the same stream by an outlet canal 1.93 miles in length.

Dale Hollow Dam starts producing TVA power

Generators at Dale Hollow Dam, 80 miles northeast of Nashville, Tenn., began turning recently to provide an additional 120,000,000 kwh. annually for TVA lines in middle Tennessee.

Col. H. V. Caman of the Corps of Engineers, said the power produced at the plant on the Obey River near Celina will be turned over to the Department of the Interior for distribution through the TVA's system.

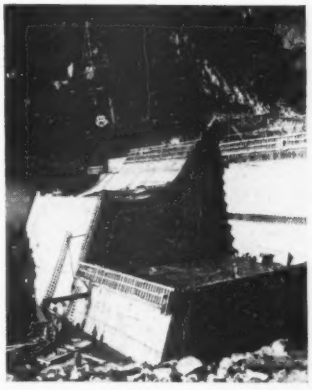
Started in 1942, the Dale Hollow Dam for several years has provided flood control facilities and an extensive recreational area in the northern section of Tennessee. Power production was originally scheduled to begin later this month, but equipment adjustments were rushed to completion to relieve a growing power shortage.

One of the three projects which are designed to bring the hydroelectric power potential of the Cumberland River valley up to capacity, Dale Hollow was constructed by the Corps of Engineers during the war. The dam, including the power house substructure, was completed by October, 1943, but work was then suspended because of the war. Construction of the power plant began in July 1946. One-fifth of the electricity used in greater Nashville will come from the generators at Dale Hollow.

Cable to span 1,730 ft. over Missouri River

A 1,730 ft. cable crossing will soon be completed over the Missouri River below Garrison Dam by the United States Geological Survey. The crossing has been under construction for two years.

This cable, the longest ever erected by the Geological Survey, has been designed so that cable car operators can take streamflow measurements from any point above the river. Thus, water discharged from Garrison Dam, 8 miles upstream, will be accurately measured.



FEATHER RIVER CANYON, Calif., is the site of Rock Creek diversion dam and also Cresta Dam, located farther downstream. Here at the $35,400,000 Rock Creek project a 6½-mile tunnel will deliver water to the power plant. Morrison-Knudsen is building this and the $26,400,000 Cresta project, to add 201,000 kw to the Pacific Gas & Electric Co. system.

High-rate anaerobic waste treatment promises to reduce digestor capacity

New York State Sewage Works Association hears report of research on effect of sea water on the biochemical oxidation of sewage—Paul E. Bardet elected president—R. S. Rankin and W. N. Torpey honored

High biochemical-oxygen-demand reductions can be obtained under high-rate anaerobic (oxygen-less) digestion at relatively low cost, if the wastes to be treated have or can be conditioned to certain chemical and physical characteristics.

This general conclusion stemmed from laboratory studies and pilot-plant experience, described by H. W. Gehm and P. F. Morgan before the New York State Sewage Works Assn., meeting jointly with the Sanitary Engineering Division of ASCE and the American Water Works Assn., on Jan. 21 in New York City. Mr. Gehm is technical advisor of the National Council for Stream Improvement; Mr. Morgan was formerly chief development engineer for the council.

Waste characteristics

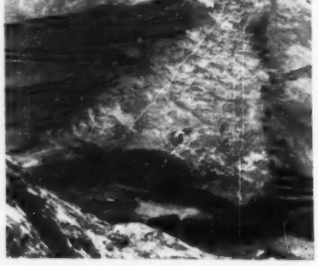
The desired characteristics of the waste were reported to be: (1) initial BOD in excess of 500 ppm.; (2) Nitrogen-carbon ratio of at least 1 to 20; (3) A high buffer capacity in relation to organic substances that form volatile acids on decomposition; (4) A minimum amount of settleable suspended matter; (5) The major portion of the organic matter is readily decomposable and the type varied; (6) Low sulfur content is advantageous but not essential; and (7) Neutral pH range and does not contain inhibiting substances.

After settling had removed coarse suspended matter, strawboard waste was found to have the desired characteristics for high-rate anaerobic digestion. The investigators stated that it can be obtained in a 600 to 3,500-ppm. concentration range, contains sufficient nitrogen, is high in buffer capacity since straw is cooked in alkali, low in sulfur, free of inhibiting substances (although pH was quite high) and has been shown to be digestible at low rates.

Laboratory studies, Mr. Gehm said, were run on a 3,500-milliliter digestor maintained at constant temperature and agitated continuously. The experiments were started with sludge taken from an old strawboard lagoon as seed.

Specific conclusions resulting from the high-rate anaerobic digestion experiments are: (1) Settled strawboard waste could be digested at high rates between 25 and 37 deg. C., the highest temperature producing optimum results; (2) No differences were experienced with high initial pH and sufficient quantities of buffers were present so that additional alkali was not needed; (3) BOD reductions in excess of 90 percent were obtainable under ideal conditions; (4) Gas produced was high in methane and low in hydrogen sulfide; (5) The seed sludge did not increase in volume appreciably and would not, therefore, present a disposal problem; (6) Intermittent operation or loading variations did not affect the process; (7) No decrease in effectiveness of seed was observed during one year of operation; (8) Agitation was found necessary to produce anywhere near the best rate of digestion; and (9) seed sludge settled rapidly and completely when agitation was discontinued.

Mr. Gehm compared digestion capacities of the high-rate anaerobic system with an efficient conventional layout by reporting that 21,450 cu. ft. was required by the former and 28,200 cu. ft. for the latter, allowing one-quarter of the digestor for clarification. It is his opinion that the new system will probably permit lower digestor capacity for a given loading than that reported. "This it must do," he said, "to justify higher construction and operating power costs that it involves." It is expected that loading tests will provide the answer as to the practicability of the high-rate anaerobic digestion system.



PINE FLAT DAM will go up at this site on Kings River, Calif., when Congress approves further appropriations. White line painted on rock indicates position of right abutment. The $36,000,000, concrete gravity type structure will be 410 ft. high and 1,850 ft. long, impounding 1,000,000 acre-ft. of water.

Sewage oxidation in sea water

Experiments to determine the effect of sea water on the biochemical oxidation of sewage were described by H. B. Gotaas, professor of sanitary engineering, University of California, Berkeley.

Dr. Gotaas reported that the rate of biological oxidation (k) varies considerably under similar conditions. Data indicate in general that in low concentrations of sea water (up to about 2.5 percent) k is larger than in fresh water.

Sea water does not significantly affect the magnitude of the first stage of biochemical oxidation, he said.

The lag period of first stage of oxidation at low temperature, Dr. Gotaas continued, is usually shorter in water containing some sea water than in fresh waters.

The second stage of biochemical oxidation takes place in sea water but it is retarded, he concluded.

Association affairs

R. S. Rankin, of The Dorr Co., New York City received the Kenneth Allen Memorial Award for his paper, "Digestor Capacity Requirements."

Wilbur N. Torpey, civil engineer, Department of Public Works, New York City, was awarded the Lewis Van Carpenter prize for his paper on sewage-plant operation, "Practical Results of Step Aeration."

New NYSSWA officers are: President—Paul E. Bardet, engineer, Jamaica Sewage Treatment Plant, Flushing, N. Y.; Vice-President—John W. Johnson, works superintendent, Buffalo, N. Y.; Secretary—Ralph Sweeney, district sanitary engineer, N. Y. State Department of Health, Middletown, N. Y.; and Treasurer—J. C. Brigham, sanitary engineer, N. Y., State Department of Health, Albany, N. Y.

At the joint meeting, the American Water Works Assn., announced the following awards: The John M. Goodell prize (a cash award given by ENR) to Laurie Leedom, construction engineer, division of water, Newark, N. J., for his paper on water-main shutdown procedure; and the John M. Diven medal to Harry Faber, research chemist, the Chlorine Institute, New York City.

Wheeler to retire as engineer chief; Maj. Gen. L. A. Pick succeeds to office

Hard on the heels of considerable speculation as to his retirement and his successor, Lt. Gen. Raymond A. Wheeler last week announced his formal retirement as of Feb. 28, as Chief of Engineers, U. S. Army.

The office of the President immediately announced that Gen. Wheeler will be succeeded on March 1 by Maj. Gen. Lewis A. Pick, who has been Missouri River Valley Division engineer for the past two and one-half years.

Gen. Wheeler, closing a 41-year Army career, will become chief engineer of the International Bank for Reconstruction and Development, generally known as the World Bank. Now 63, Gen. Wheeler is a native of Peoria, Ill., and saw service in two world wars. He was a 1911 graduate of West Point, and during his long service was assigned to posts in Panama, Mexico and throughout the United States and its possessions. During World War II he was in command of the Asia Supply Command, and when the war ended, he was commanding general of U. S. forces in the India-Burma Theater. He became Chief of Engineers on Oct. 1, 1945.

Gen. Wheeler's retirement was first discussed in May, 1948 (ENR May 27, Vol. p. 761), when he requested retirement the following June. He was prevailed upon to retain the post for an indefinite period.

Best known as co-author of the Pick-Sloan plan for the development of the Missouri Valley, Gen. Pick returned from distinguished war service that included construction of the Ledo Road, to take over the Missouri Valley engineer division, early in 1946.

A native of Brookneal, Va., he is an engineering graduate of Virginia Polytechnic Institute, and was commissioned in the Engineer Corps during World War I. After war service and commissioning in the regular forces, he served in various engineer posts in the Philippine Islands, and in the United States.

He served as engineer of the Missouri River Division in 1942-43, and during that time was responsible for the development of the conservation plan that bears his name—and which is now one of the bases of the vast program now being carried in the river basin. Prepared in 90 days, the plan encompasses flood control and multiple-purpose development of the nine-state area within the river basin, and has been hailed as the first to treat the problems of the great watershed as a whole. The plan was approved by Congress and enacted into law in December, 1944.

Truman asks amendment to hold Straus and Boke

President Truman last week sent to Congress two requests affecting the Bureau of Reclamation. The first asked for amendment of the law—passed by the last Congress—requiring that only engineers be allowed to serve as commissioner of reclamation or as regional directors.

The requested change would permit payment of salaries after Jan. 31 to Commissioner Michael W. Straus and to Richard L. Boke, regional director in California.

Supplemental funds for the current fiscal year ending June 30 were requested in a second communication.

Included in the supplemental estimate is $17,100,000 for reclamation construction projects—made up of $5,000,000 each for Davis Dam and Columbia Basin, $5,100,000 for the Missouri River Basin, and $2,000,000 for Colorado-Big Thompson. The estimate also lists $1,125,000 for construction on three other projects—Boise, Lewiston Orchards and Provo River.

Hearings on the supplemental appropriations began immediately. The supplemental bill sets up also $3,450,000 for the Tennessee Valley Authority—$3,000,000 of it to go to the proposed new steam plant at New Johnsonville, Tenn.

AEC seminar eases atomic waste scare

A two-day seminar of the Atomic Energy Commission in Washington last week took most of the scares and bugbears out of the disposal of atomic wastes. Engineers invited to the meeting were pretty well agreed on that verdict.

No restricted information was involved in the papers or discussions at the seminar. Those in attendance were encouraged to pass on to fellow engineers the knowledge there acquired. Thus—without departing far from its cautious policy of standing guard in all data—the AEC moved one step nearer to taking the technical professions into confidence on unrestricted information, at least so far as public health is concerned.

Attendance at the meeting was limited to 35 representatives nominated by the sanitary and waterworks engineering associations, plus 20 from government agencies other than AEC. The commission's engineering division wanted the seminar to be opened to the technical press, which had helped promote the idea, but AEC management blocked that proposal. Results of last week's seminar will be evaluated, Chairman David E. Lilienthal said, before any plans are considered for possible future meetings.

At the first seminar session, Mr. Lilienthal in his introductory remarks pointed out that "radiation is just as much a natural phenomenon as anything else. The fact that we have by intelligence multiplied it does not change that fact. I am sure that just as we were able by our intelligence to conquer other things, we will conquer this as well."

Subsequent speakers and informal discussion periods took up fundamental topics bearing on the central theme of waste disposal. Among them were (1) the types of activities in the atomic energy program that produce radioactive wastes; (2) the effects, controls, tolerances and methods of measuring radioactivity; (3) the production, distribution, use and control of radioisotopes; (4) health problems in atomic energy activities; (5) current methods for disposing of gaseous, liquid and solid radioactive wastes; and (6) an appraisal of sanitary engineering problems in atomic energy industry.

Radioactive wastes from the Oak Ridge, Tenn., production plants are discharged to the Clinch River, Dr. Karl Z. Morgan, director of the health physics division, Oak Ridge National Laboratory, told the meeting. Even with those discharges, the level of radioactivity in the river is found to be considerably less than in many of the mineral waters widely used in the United States for drinking.

In summarizing the sanitary engineering problems connected with atomic energy, Dr. Abel Wolman, head, department of sanitary engineering, Johns Hopkins University, called attention to the wartime establishment of the atomic energy industry. It will be difficult for the industry to dislodge itself from these circumstances, but this must occur if the industry and its special types of research are to permeate throughout the United States.

Dr. Wolman predicted that the sanitary engineer and the water and sewage plant operators in the future will take on the function of protecting the water supply and the atmosphere of communities against air and water pollution of other types.

Bus terminal to ease New York traffic

A great step forward toward breaking the traffic bottleneck in New York City was taken last week when ground was broken for the $20,000,000 Port of New York Authority bus terminal.

When this building is completed, it is expected eventually to replace the numerous bus terminals scattered through mid-Manhattan. Since ramps will connect the new terminal directly with the Lincoln Tunnel to New Jersey, 2,500 buses per day will be removed from the city streets, greatly relieving traffic congestion.

The Port Authority terminal will occupy the entire block from 40th to 41st streets between Eighth and Ninth avenues in midtown Manhattan (ENR Jan. 27, p. 30). Four stories high, it will handle 60,000 passenger arrivals per day and 750 bus arrivals per hour, plus an equal number of departures. It will provide parking for 450 automobiles on the roof, which has a ramp connection to the Lincoln Tunnel.

Long-haul buses will enter at street level at Ninth Ave. and proceed to one of the 40 spaces available for unloading and loading. Above, on the level of the Eighth Ave. entrance, will be the main concourse with ticket offices, restaurants and concessions and a series of 15 moving stairs connecting with upper and lower levels. Immediately above the main floor will be a large suburban concourse separated into three major pedestrian traffic sorting areas, served by 16 stairways and 14 moving stairs. The short-haul bus platform with 84 loading spaces and ramp connections to the Lincoln Tunnel and city streets will be on the fourth floor.

Excavation is being done by the Howard Collins Construction Co. of New York City under a $624,315 contract.

Construction is being financed initially by the sale of $16,500,000 in Port Authority bonds. The project will be self-supporting, with a high proportion of the revenues expected to be obtained from concessions.

The Port of New York Authority is an agency set up by the states of New York and New Jersey to develop the facilities and promote commerce of the port. It operates the Lincoln and Holland tunnels; the George Washington and three Staten Island bridges; N. Y. International, La Guardia, Newark and Teterboro airports; and an inland freight terminal. Its marine facilities include Port Newark and grain elevators and piers in Brooklyn. In addition to the bus terminal, it has truck terminals under way in Manhattan and Newark. John M. Kyle, Jr., is chief engineer, and Walter P. McQuade is architect.

Raymond F. Goudey dies: expert sanitary engineer

Raymond F. Goudey, 54, for many years sanitary engineer of the Los Angeles, Calif., Bureau of Waterworks and Supply, and more recently in private practice, died recently. He had received degrees from both M.I.T. and the University of Southern California.

From 1947 to 1929 Mr. Goudey was successively chief chemist and bacteriologist, assistant engineer and southern division engineer of the California Department of Public Health. Then came two years in the sanitary corps of U. S. Army. After which he joined the Los Angeles Department of Health and Sanitation.

In 1947 he went with the Truesdail Laboratories, Incorporated, Los Angeles, until November 1, 1948, when he opened his own office for consulting work on water treatment and waste disposal. Through his society activities, writings, and inventions he had become one of the best known technical men, if not the most outstanding in his field.

Brig. Gen. Feringa to head Mississippi R. Commission

Nomination of Brig. Gen. Peter A. Feringa to be president of the Mississippi River Commission was unanimously approved by the Senate Jan. 17. General Feringa has been serving under a recess appointment since Jan. 1, when Maj. Gen. R. W. Crawford retired to become executive vice-president of the Lower Mississippi Valley Flood Control Association.

General Feringa will act as division engineer of the Lower Mississippi Valley Division, Corps of Engineers.

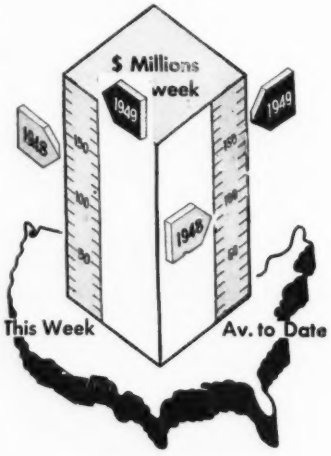
Tennessee to restudy $12.7 million road work

The Tennessee highway department will not recognize as binding contracts of $12,700,000 let by previous state administration, E. W. Eggleston, commissioner, said last week.

Mr. Eggleston said the state will investigate each contract let. The contracts involved were included in two lettings—on Nov. 15 and Dec. 17.

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost	Feb.'49	475.37	228.51
Building Cost	Feb.'49	352.87	190.75
Volume	Jan.'49	255	112



Activity This Week

As reported to ENR

Amount of contracts let

(Millions of dollars, continental U. S. only)

	Week of Feb. 3 1949	Cumulative 1949 (5 wks.)	Cumulative 1948 (6 wks.)	% Chge
Federal	$5.4	$135.3	$91.6	+77
State & Mun.	61.0	267.1	200.0	+60
Total Public	$66.4	$402.4	$291.6	+66
Total Private	143.3	373.1	274.2	+63
U. S. Total	$209.7	$775.5	$565.8	+64

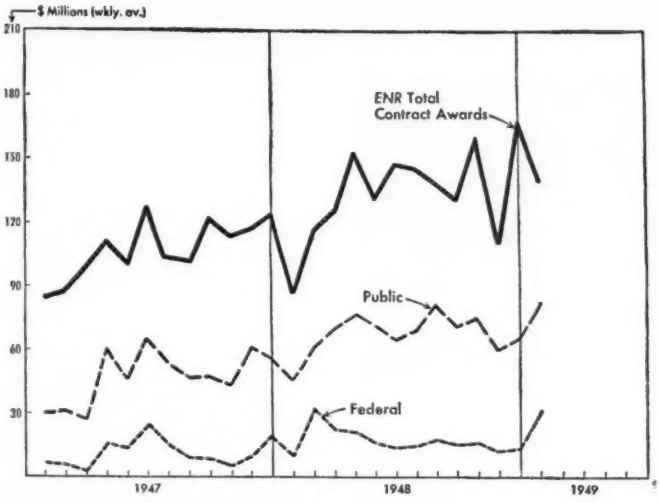
Contracts by type of work

	This Week	Cumulative 1949 (5 wks.)	Cumulative 1948 (6 wks.)	% Chge
Waterworks	$2.8	$12.4	$26.4	−43
Sewerage	2.9	21.2	17.0	+50
Bridges	2.8	32.7	20.6	+91
Highways	2.9	56.0	71.7	−17
Earthwork, Waterways	2.3	52.3	55.5	+13
Buildings, Public	37.2	202.1	80.0	+204
Industrial	35.8	76.5	68.2	+34
Commercial	95.1	258.5	185.4	+67
Unclassified	27.9	69.8	41.0	+106

NOTE: Minimum size projects included are: Waterworks and waterway projects, $28,000; other public works, $50,000; industrial buildings, $68,000; other buildings, $250,000.

New capital for construction

	Cumulative 1949 (5 wks.)	Cumulative 1948 (6 wks.)	% Chge
NON-FEDERAL	$477.3	$244.1	+135
Corporate Securities	277.4	120.4	+176
State and Municipal	199.9	123.7	+94
Total Capital	$477.3	$244.1	+135



Final January figures show construction up 60%

Construction dollar commitments for the full month of January top all previous January records and are now 60 percent above a year ago. These heavy engineering construction contracts, as recorded by ENGINEERING NEWS-RECORD, totaled $141 million, compared with $88,000,000 last January and $126 million in January, 1942, the previous January record.

Several large public building contracts awarded during the last week of January were responsible for this month's record volume—the U. S. Atomic Energy Commission's $70,000,000 contract for a gaseous diffusion plant in Oak Ridge, Tennessee, the New York City Housing Authority's $9,859,000 Pelham Parkway Houses and $13,319,000 Lester W. Patterson Houses and a $5,000,000 contract for a Tuberculosis and Chronic Disease Hospital in Brooklyn, N. Y.

Thus, dollar commitments for public building construction in January were the highest in nearly six years. The weekly rate averaged $41,240,000, up 195 percent over a year ago and 73 percent over December, 1948. Earthwork, irrigation and drainage projects and bridge construction ended the month approximately double last January's volume. Sewerage, commercial buildings and unclassified construction were up about 50 percent.

In a geographic breakdown all areas but New England participated in the gain over last year—ranging from 45 percent for the section west of the Mississippi to 154 percent for the Middle West. New England showed a loss of 30 percent. Compared with December, 1948, only three sections gained. Construction activity in the South was up 73 percent, in the Middle West, 37 percent; and in New England, 11 percent. Losses were recorded for the Middle Atlantic of 39 percent, West of the Mississippi, 35 percent and Far West, 24 percent.

New construction capital raised by private organizations and states and municipalities totaled $359 million in January, a weekly average of $90,000,000. Although below the November and December highs of $132 and $168 million, this January's new bond and security sales were double the weekly average of $45,000,000 a year ago.

Corporate securities totaled $200 million with public utilities getting $114 million, over half the total. The Bethlehem Steel Corporation raised $70,600,000 last month through the sale of stocks and bonds and the Texas Gas Transmission Corporation, $60,000,000 for a Texas-Ohio pipe line.

States and municipalities obtained $159 million for construction. About $81,000,000, or 50 percent of this total will go for schools and $29,000,000 or nearly 20 percent for housing.

ENGINEERING CONSTRUCTION CONTRACTS REPORTED TO ENGINEERING NEWS-RECORD—JANUARY, 1949

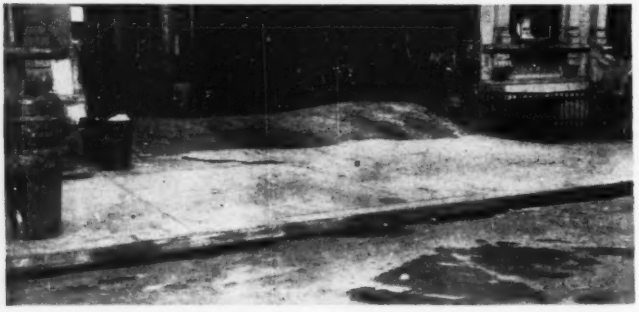
ENGINEERING NEWS-RECORD *reports continental U. S. Construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation,* $28,000; *other public works* $50,000; *industrial buildings,* $68,000; *other buildings,* $250,000
Four Weeks—Thousands of Dollars (000 Omitted)

	January, 1949						Total U. S.		%	
Public Works	**New England**	**Middle Atlantic**	**South**	**Mid West**	**West of Mississippi**	**Far West**	**January 1949**	**January 1948**	**Change '48 to '49**	**Canada Jan. '49**
Waterworks	87	1,110	497	437	4,700	2,789	9,620	19,090	− 37	527
Sewerage	3,012	3,435	1,017	618	6,404	3,764	18,250	15,130	+ 51	520
Bridges	668	15,365	2,769	3,211	5,069	2,671	29,753	18,930	+ 96	215
Earthwork and waterways	34	301	3,306	3,703	27,784	14,830	49,958	28,028	+123	1,592
Streets and roads	964	11,942	8,691	11,124	10,008	4,351	47,080	65,564	− 10	609
Buildings, residential	2,206	24,424	1,101	277	2,701	.....	30,709	13,432	+186	2,350
other	3,065	21,019	74,835	13,128	12,028	10,174	134,249	56,386	+198	4,061
Unclassified	358	4,413	2,287	2,539	4,852	1,944	16,393	17,866	+ 15	3,542
Total public	10,394	82,009	94,503	35,037	73,546	40,523	336,012	234,426	+ 79	13,416
Federal government (included in above classifications)	157	299	74,966	4,090	35,078	15,307	129,897	56,167	+189	4,483
Private										
Bridges	.....	.....	.....	.....	130	.....	130	.....	0	.....
Industrial buildings	748	5,114	4,024	24,816	4,711	1,283	40,696	50,974	− 2	2,734
Com'l buildings, residential	5,089	52,955	18,528	1,050	30,045	7,713	115,380	102,852	+ 40	3,550
other	4,205	3,950	5,307	6,760	21,836	5,986	48,044	36,447	+ 65	6,950
Unclassified	70	1,606	4,624	7,778	6,241	5,245	25,564	17,256	+ 85	1,735
Total private	10,112	63,625	32,483	40,404	62,963	20,227	229,814	207,529	+ 38	14,969
Total Engineering Construction:										
January, 1949—4 weeks	20,506	145,634	126,986	75,441	136,509	60,750	565,826	.....	.....	28,385
December, 1948—5 weeks	23,050	298,353	91,868	69,008	260,941	100,324	843,544	.....	.....	40,181
January, 1948—5 weeks	36,571	116,762	98,203	37,099	117,478	35,842	.....	441,955	.....	51,296
% Change '48 to '49	− 30	+ 56	+ 62	+ 154	+ 45	+ 112	.....	.....	+ 60	.....

RANDOM LINES . . .

REFUSE-STREWN STREETS and vacant lots are disgraceful, but when—

SCHOOL CHILDREN are given sanitation education and go into action—



CLEAN-UP amazes even the most cynical observer. (N. Y. Daily News Photos)

It's not difficult to maintain clean streets in overcrowded low-income sections of large cities. All that's needed is mutual cooperation among tenants, property owners, building superintendents and the refuse-collection department.

A newspaper-sponsored contest in six typical blocks of New York's crowded East Harlem section recently produced remarkable improvement in cleanliness and appearance.

The drive was pushed by the NEW YORK DAILY NEWS and by an intense education campaign in district high schools. It was inspired by the newspaper's desire to check the sanitation experts' contention that the refuse-collection and street-cleaning problem could largely be solved by improved public cooperation, plus regular collections maintained on railroad-schedule timing.

As a public service, the DAILY NEWS placed its massive circulation squarely behind the drive. But it did more than that: It donated prizes for each family in each block that showed the greatest clean-up improvement in the five-day test period, and laid down daily barrages of hard-hitting news stories and editorials, pin-pointed with before-and-after record photographs.

Organizing for action

District high schools were control centers for personalized public education. Some lines of attack were: seminars on sanitation in regular civics classes; evening discussions for parents on sanitary problems attended by city officials; a parade of school children carrying placards calling for increased civic pride and cleaner streets; instruction of a group of older boys, known as "Youth-builders," in the objectives of the street-cleaning contest who were sent into the test area to gain support of the residents. Spanish- and Italian-speaking students were used where needed; contact with clergymen to urge inclusion of a "plug" for sanitation in their Sunday sermons; and use of educational posters, "plastered" all over the test areas.

A daily call for clean-up was broadcast by the city-owned radio station and carried directly into test-area streets by city-owned sound trucks.

The contest was judged by a group of sanitary experts. Included were: Rolf Eliassen, professor of sanitary engineering, New York University; Charles C. Spencer, assistant professor of sanitary science, Columbia University; John Flockhart, supervising engineer for refuse collection and disposal, Newark, N. J.; and Mrs. Maurice Schwob, representing the Outdoor Cleanliness Association.

The problem of cleaner streets

As in most U. S. cities, the amount of household refuse in New York has greatly increased in the last seven years. This is attributed to increased population, greater waste per family resulting from a higher standard of living and increased-sized families living in cramped quarters.

Refuse-collection agencies face two problems: physical difficulty of handling the greater volume under severe labor shortages and rising cost of collection.

A major factor in both problems is the failure of residents to prepare refuse properly for pick-up by city forces. Ashes are segregated but garbage and trash are carelessly stuffed in uncovered cans, cardboard boxes or merely wrapped in paper and tossed into the gutter—sometimes from upper story windows.

Scattered debris and unsightly littering, directly caused by improper storage of refuse, calls for sweeping, piling and shoveling into collection trucks. This unnecessary work requires labor, which would be employed on collection, and adds to costs.

Cooperation needed

The officials of New York's Department of Sanitation feel that: (1) Only improved cooperation among building occupants, owners, agents and building superintendents can bring the refuse-collection problem one step nearer to solution; (2) The next step is more adequate collection with additional, improved equipment.

To build up public consciousness of the need for cooperation, the department has initiated a continuing educational program among community groups. While results of the campaign are encouraging, it was felt that an intense localized clean-up campaign would demonstrate what could be accomplished if public interest was sufficiently aroused. The contest certainly did this.

It is interesting to note that, almost without exception, residents of the test area energetically took part in the clean-up. Response of the children was especially notable. They participated in the educational activities as well as actual clean-up operations with equal enthusiasm. One incentive was that clean streets and lots make better playgrounds. While partially explained by the contest aspect, the favorable reaction of children appears to represent an almost limitless reservoir of energy for civic improvement when properly tapped.

The moral?

Each city dweller must ask himself, "Do I want clean streets and healthy living spaces?" If he answers, "Yes," he must bind himself to provide the basic cooperation that will insure successful and economical clean-up operations.—JCB

LESSONS LEARNED

(1) Careless refuse collection is frequently accompanied by garbage scattered across streets, backyards, and areaways, an unhealthy condition contributing to large rat and insect populations.
(2) Not enough garbage cans are available to handle greatly increased quantities of refuse; those in use are very old with poor-fitting covers or no covers at all.
(3) Good "housekeeping" depends on teamwork between housewives and building superintendents. They alone can assure that refuse is put in tight, covered cans and made readily accessible for collection. To attain this essential teamwork requires a continuous educational effort.
(4) The greatest improvement in refuse collection results when school children are taught sanitary principles. They carry the message into homes and insist on clean surroundings.

Uncertain financing seen big sanitation problem

Uncertainty as to future loans and grants under the Water Pollution Control Act of 1948 is definitely holding up construction of treatment works by municipalities and local public bodies. That fact was brought out forcibly at the recent two-day meeting of the Interstate Commission on the Potomac River Basin in Washington.

Local officials are hesitating for two reasons, the meeting was told. First, they do not know how soon or in what amount Congress will start appropriating money under the law's five-year authorization to furnish $1,000,000 a year in grants for preliminary planning and $22,500,000 a year in loans for construction of treatment works. Second, they think that Congress may amend the law by stepping up the authorizations and adding construction grants.

Their questions are the more insistent because they see the present $22,500,000 loan authority as a drop in the bucket, when measured against the needs in the 48 states.

Commission members expressed their opinion that Congress should make clear its position on both liberalized lending and possible construction grants. The Ohio River Valley Water Sanitation Commission at its Jan. 5 meeting had passed a resolution requesting Congress to take such action.

At the Potomac River Commission Meeting, a resolution was introduced to ask the Council of State Governments to make a study of grants and loans for the guidance of Congress.

In connection with the Washington meeting, the Maryland Water Pollution Control Commission convened separately and passed a resolution that Maryland would adopt and use West Virginia standards for water purity in all its streams, provided the Potomac River Commission would accept those standards. The commission referred the proposal to its technical committee.

Dayton firm to plan AEC's $70 million Oak Ridge job

The Oak Ridge, Tenn., office of the Atomic Energy Commission announced recently an agreement with the Maxon Construction Co., Inc., Dayton, Ohio, to carry out preliminary planning and scheduling for construction of a $70,000,000 plant addition to produce Uranium-235. A design contract for the new gaseous diffusion plant addition had been awarded the previous week to Giffels and Vallet, architect-engineers, Detroit, Mich.

Expansion of the Oak Ridge facilities will add "very substantially to the total production of U-235 for the protection of our nation," Chairman David E. Lilienthal of the AEC told local residents during a recent visit there.

No actual construction is included in the Maxon agreement with AEC. The construction firm will (1) make preliminary layouts and designs of construction plant and equipment, (2) develop labor force estimates, (3) work out advance planning and scheduling of construction operations and procurement of materials, and (4) perform other related services.

Housing also planned

Construction of the new addition, scheduled to start next summer, will take about two years, according to J. C. Franklin, manager of Oak Ridge operations.

At the same time, AEC's Oak Ridge office invited bids from contractors for new negro housing facilities, including seven permanent dormitories, a bath house—at a swimming pool—and conversion of a school nursery into a cafeteria. The bids will be opened Feb. 16.

Plans and specifications can be obtained from the Community Construction Contract Section, U. S. Atomic Energy Commission, Oak Ridge, Tenn.

More than 31,000 sq. ft. of floor area will be inclosed in the seven one-story dormitories—to house some 400 employees—and an adjoining boiler room. The buildings will have concrete block walls, concrete slab floors, and wood joists with built-up roofing. They will be heated by a circulating hot water system with radiators.

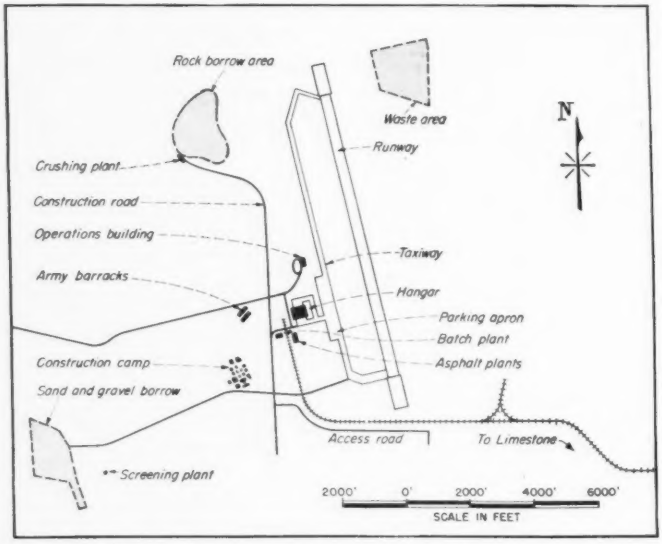
The dormitories and related facilities are the first part of a projected plan to build essential housing accommodations for negro employees and their families. Future construction of single-family dwelling units is contemplated. Representatives of the negro population have expressed approval of the proposed residential program.

Runway base of drained gravel goes deeper than the northern Maine frost, as . . .

A Postwar Bomber Base Emerges

Up in the fog-free far corner of Maine, where it's only a few miles north and a few miles east to Canada, Uncle Sam is building Limestone Air Force Base, complete with one long runway, a 340-ft. span, reinforced concrete arch hangar, a control building, barracks and utilities.

This new facility is to be similar in function to two other bases, one near Rapid City, S. D. and the other near Fairfield, Ohio. At the South Dakota base, a hangar similar to that at Limestone is under construction, and at the Ohio base a 21-in. concrete 300x10,000-ft. runway has been built since the war ("Runways for 75-ton Wheel Loads," ENR Mar. 3, 1948, vol. p. 362).



THE JOB LAYOUT. Sand and gravel borrow area at lower left was source of selected material for runway base. Screening plant, which took about 10 percent of pit run, was source of hangar concrete aggregate. Crushing plant at upper left supplied rock for runway macadam course.

Limestone work, however, is more complex than that at the other bases, where air force installations already existed.

At Limestone the engineers, in a two-year $18,000,000 project, are performing all the steps necessary to transform a raw and isolated countryside into an active air facility. The most striking departure in design lies in the Limestone runway, which, while having the same dimensions as that at Fairfield, is asphaltic concrete over macadam and a thick bed of underdrained gravel.

This runway design, like many other Limestone features, was imposed by the site conditions. Limestone is in an area where the winters are long and the frost goes deep. The terrain is a rolling plateau, sprinkled with bogs at all elevations. Eighty percent of the 9,000-acre government reservation was forest when work started; the other 20 percent had been farmed in potatoes, the backbone crop in the area's agricultural economy.

Long winters, deep frost, rolling ground, bogs, forest and even pota-

toes, present their problems to the constructors. Potatoes are significant because during the last weeks of the short construction season many workers leave the job to harvest them.

Project preliminaries

In the spring of 1947 the Air Force chose Limestone from several northeastern sites that had been investigated by the Army Engineers. Not having time to prepare full plans and specifications before available Air Force funds expired June 30 of that year, the Army Engineers as construction agents resorted to still-existing war powers by negotiating a cost-plus-fixed-fee contract for the work. This contract was made with an association of two New England contractors, Lane Construction Corp., Connecticut highway builder, and T. W. Cunningham, Inc., Maine building contractor. In the general scheme, Lane men were assigned to handle earthwork and Cunningham men were placed on the buildings; the first earthwork was that for a single-track service railroad to the site from a Bangor & Aroostook siding in Limestone village, five miles southeast.

The railroad was finished early in the 1947-48 winter, whereupon the contractor began bringing in his heavier plant items. In the meantime he had been building and improving access roads, erecting a 600-man construction camp out of surplus personnel units brought 65 miles from the Army airfield at Houlton, Maine, getting his warehouses and shops ready, clearing almost 1,000 acres of forest and opening up a quarry and an immense gravel pit. Before snow fell there were 1,000 men on the job; the winter average was about 500.

Site-clearing operations injected an unusual sideline in the Army's operations. While much of the growth was scrub conifer and deciduous, a substantial quantity of pulpwood was harvested. This the Army sold to a nearby paper company.

IT'S WINTER AND IT'S 15 DEG. BELOW ZERO as the canvas-swathed crawler tractors load a 15-yd. carrying scraper during runway muck stripping. Contractors took advantage of freezing weather to clean out bogs that in warmer seasons would have mired the lightest equipment.

A FROST-FREE RUNWAY

Heavy earthwork, performed primarily to prevent frost damage, was the outstanding feature of runway construction at Limestone. The first step was stripping 690,000 cu. yd.—almost all of it from taxiway and parking apron areas and from a 500-ft.-wide strip along the length of the runway. Stripping exposed glacial till, clay and rock.

Winter was an indispensable helper on much of this work. Bogs were so extensive and deep that nothing short of a giant dragline operating around the edges could have mucked them out in warm weather. Frozen, the bogs were easy picking for ordinary equipment.

As stripping entered its final stages, excavation in underlying earth got under way. This work was complicated by the cross-sectional design of the 500-ft. width. The central 300 ft.—where frost damage is to be avoided—is compacted earth at a level below the frost line, filled with gravel, and paved with asphaltic concrete on water-bound macadam. The 100-ft. marginal strips are of compacted and sodded soil, at finished grade.

In scheme, then, native earthwork—called the subgrade—takes the form of two marginal 100-ft. earth roads at final grade, divided by a 300-ft. depressed road. Gravel (called the subbase), crushed rock and asphalt bring this central strip up to grade.

Runway slope from centerline to edge of pavement is 1½ percent, and across the sodded area it is 2 percent. A blanket of impervious material under the pavement joint keeps surface water from the sub-base. All pervious fill drains to perforated pipe laid in shallow trenches at the edges of the central subgrade. Rock is excavated only for the macadam and asphalt. Where rock occurs in the zone between crushed rock and frost line the space is filled with pervious material.

In designing this cross-section the Army Engineers followed current practice by providing maximum subgrade and sub-base support for the light, flexible surface, then taking all precautions against the weakening effects of water and temperature change.

Longitudinally, the runway was designed with one 2,000-ft. section on a one-percent grade, connected by 1,000-ft. vertical curves to two level stretches, one a few hundred feet long at the south end and the other about a mile long on the north. This layout takes the runway in shallow cut through about 700 ft. of rock outcrop in the high section and down into the long earth-base section, where cuts and fills are balanced. Although the site was relatively flat, almost a million and a half yards were moved.

Runway construction

Late spring, with the slow retreat of frost and bitter weather, brought more men and machines into the runway area. They drilled and blasted the rock down to a foot below grade, and they moved earth from cut to fill. The carrying scrapers went to trimming duty behind two large towed elevating graders that loaded into dump wagons.

In fill, earth was spread by about fifteen bulldozers and four to six graders, and compacted to 6-in. layers by 600-psi. tamping rollers. At the peak, daily yardages ran 30-35,000.

The next step in runway construction was filling the 300-ft. wide depressed way with about a million yards of pervious material. After installation of the marginal perforated 6-in. bituminous-coated corrugated metal drains, final-tamping the whole area and shaping it with road graders, bottom-dump wagons and rear dump trucks brought in gravel from a pit and stockpile 3 miles to the west. Containing up to 6 percent fines, the gravel was compacted in layers by two pneumatic-tired compactors, one of 100 tons on two wheels and the other of 200 tons on four

A MILLION AND A HALF YARDS were moved from cut to fill, once muck and frost were out of the way. Preceded by rooters, two of these belt loaders dug the loosened material and cast it into bottom-dump wagons.

GRAVEL FOR THE RUNWAY BASE was knocked down and washed by water from swivel-mounted fire nozzles. Shovels loaded washed material into trucks.

wheels. Desired compaction to 100 percent of maximum density was obtained when gravel no longer shoved in waves ahead of the wheels. This condition usually was reached in two to six passes. The larger of these rollers was hauled by two large tractors in tandem. One tractor could do the job on the straightaway, but it lacked traction to turn the massive rig.

The method of conditioning pit-run material for runway fill was unusual and effective. Jets of water washed a standing gravel bank down to a wet angle of repose. The water that drained off was muddy, and the material left behind contained about 3 percent fines, about half the percentage considered maximum for adequate permeability in the sub-base. In power-shovel loading for transport to stockpile or runway, some extra fines were picked up accidentally, but these did not run the percentage over that allowed for the flight-strip sub-base.

Natural conditions were excellent for the jet-washing method. A small stream ran alongside the bank, which had a 40-ft.-high face 2,000 ft. long. (The deposit, still mostly unused, extends several thousand feet westward.) In the spring of 1948, when work at the pit began, a series of small earth dams was built in the stream opposite the pit face. Three 1,000-gpm. gasoline-driven pumps were installed at the upper pool to supply, through an 8-in. pipe header and 2½-in. fire hoses, two nozzles swivel-mounted on the bed of a light truck. Pairs of plow handles, one attached to each nozzle, enabled workmen to aim the jets. Muddy wash water drained to the lower pools, which acted as stilling basins. Another pump setup at the lowest pool supplied a second truck-mounted nozzle pair. A 2-yd. power shovel worked with each jet truck.

Late in the summer of 1948, the highest pool dried up, and all water was pumped from the lower pool, which had an adequate inflow from returned jet water and groundwater.

Before the runway was ready for gravel, most of the washed bank-run that had been moved was stockpiled nearby. Less than 10 percent went to a small plant across a creek, where the gravel was crushed, washed and screened for asphalt and concrete aggregate.

Increasing the capacity

At first, full-scale runway filling took both pit and stockpile materials as fast as they could be loaded; as the stockpile dwindled and jetting operations exposed a broader base, the contractor put in a third pump, jet and shovel team. Haulage from pit or stockpile to the runway ran as high as 90,000 cu. yd. in one week; 56,000 cu.yd. of this came directly from the pit. Dumped gravel was spread and shaped by three bulldozers and five graders.

Once the gravel subgrade was fully built up, crushed rock was dumped from light trucks into uniform-rate spreaders and compacted by smooth-wheeled rollers. After key rock and screening were brush-dragged and rolled into a second layer, the macadam was sealed with 0.35 gal. of bituminous material per sq.yd.

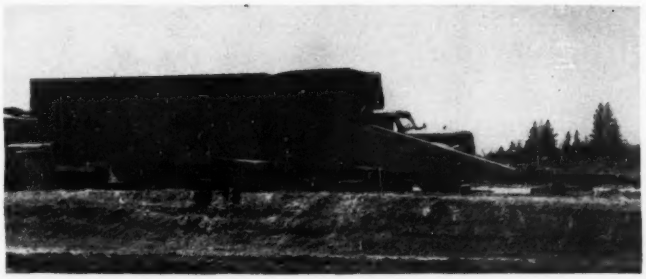
Crushed rock for this course, 136,800 cu.yd. of it, came from a quarry and crushing plant about a mile west of the north end of the runway. Air pressure for the quarry wagon drills came from a battery of eleven portable compressors with a total capacity of about 3,500 cfm. A 2½-yd. shovel loaded blasted rock into three 9-yd. dump trucks for removal to the 170-ton-per-hour crushing plant adjacent to the quarry. Diesel engines supplied the crusher power.

For the paving asphalt two 75-ton-per-hour electrically-powered and oil-fired plants were erected. Each has a 4,000-lb. pugmill. Hot mixed asphaltic concrete was trucked from these plants to the runways, where it was dumped into one of two asphalt pavers. The pavers laid 10-ft.-wide courses that were hot-rolled with two-wheel tandems and back-rolled with three-wheel tandems.

Drainage

Two drainage systems—for underdrainage for the runway and for surface drainage—were installed. In addition, low spots in rock excavation and wet pockets below the subgrade were drained as their presence was bared.

In the formal drainage scheme,



200 TONS ON FOUR TIRES. This is the larger of two compactors that consolidated the gravel base at Limestone. It is made up of two 100-ton 2-wheel units linked abreast. (All photos by U. S. Corps of Engineers)

four-fifths of the surface and runway groundwater is carried away from the field at five points on the west and south, to one watershed; the remainder drains northeastward from one point. Runway surface water runs across the surface to the edges of the sodded strips, then falls or to natural slopes or into inlets that lead it through concrete pipe to an outflow ditch. Water from the gravel fill goes to the marginal drains, then to the concrete pipe system.

Six-inch observation risers at 300-ft. intervals along the marginal drains will enable the Air Force maintenance men to check on the water level (and hence the stability) in the pervious sub-base. Some 6-in. perforated pipes also were installed alongside the runway at three points to intercept the flow from swamps. In all, 42,700 ft. of metal pipe and 29,825 ft. of concrete pipe were laid, the latter with 4-ft. min. cover.

Rock pocket drainage was achieved by blasting small trenches to connect the pockets with subdrains. Drainage of wet pockets of earth in the subgrade was imposed by conditions discovered during construction. The pockets, containing glacial till, were surrounded by clay, which prevented natural drainage and rendered the fill unstable. A rough ditch, backhoed to the artificial drainage system and backfilled with pervious material, rapidly dried and stabilized the pockets for sheepsfoot compaction.

RECORD-BREAKING CONCRETE ROOF SPAN

While forests masked Limestone runway construction from the sight of passersby there was little to hide the hangar job from the citizens of nearby Canada and upper Aroostook county.

First, in the late spring of 1948 they watched the arch centering rise to its full 95-ft. height on the horizon of the Limestone plateau, then they saw the first 50-ft. section of 340-ft. reinforced concrete arch. Throughout the summer they saw sections added until, just before the potato digging season, the full 300-ft. length was complete.

This hangar and its twin, built at Rapid City, S. D.—have the longest-span reinforced concrete arch roofs yet built in the United States.

The 340-ft. span is clear. Overall width of the hangar is 370 ft., including arch abutments. The inside of the barrel is smooth. Maximum inside arch clearance is 90 ft. above the floor; 74 ft. above the springing line. External ribs, spaced 25 ft. c. to c., haunch from a depth of 7 ft. at the skewback to 5 ft. at 20 ft. 9 in. out. The end ribs are 20 in. wide. Even-numbered ribs, each at the center of a poured section, likewise are 20 in. wide, while the interior odd-numbered ribs are 24 in. wide, including provision for expansion in the construction joint.

The roof slab is 6 in. thick at the ribs, tapering to 5 in., 4 ft. from the ribs. It is topped by ½ in. of spun glass insulation and by three-ply roofing.

A reinforced concrete floor averaging 20 in. in thickness was placed on a compacted gravel bed similar to the runway sub-base. Floors drain to the center of each 60 ft. by 60 ft. panel.

End enclosures will be of steel and insulated corrugated-protected-metal, with sliding doors 40 ft. high for full-width openings, and with an additional 20-ft.-high movable section 50 ft. wide at the center to allow 60-ft. headroom for high-tailed airplanes. End enclosures add 14 ft. to the overall length.

Sliding doors, two at each end, will consist of six telescoping steel and glass leaves. Electrically operated, the leaves will ride on separate 40-lb. steel rails set in concrete sills. Hot water pipes embedded in the concrete will keep the sills and tracks ice-free.

Hangar heating will be 40 percent radiant from the floor, and 60 percent by high-pressure hot water unit heaters hung from the ceiling. Lighting fixtures, installed immediately after each pour, are suspended on ⅛-in. cables reeved through a series of small ceiling-mounted sheaves down to reels on the wall. This arrangement will allow maintenance men to lower fixtures for servicing at floor level. A tension reel between the ceiling outlet box and the fixture holds enough wire to accommodate the drop for service.

Hangar construction

Hangar abutments were started last winter. Bedrock along the abutment line was exposed and winter protection was provided. The reinforced concrete monoliths were poured to the skewback and in warm weather interconnected by beams at the interior and exterior faces. Twenty-six abutments were built.

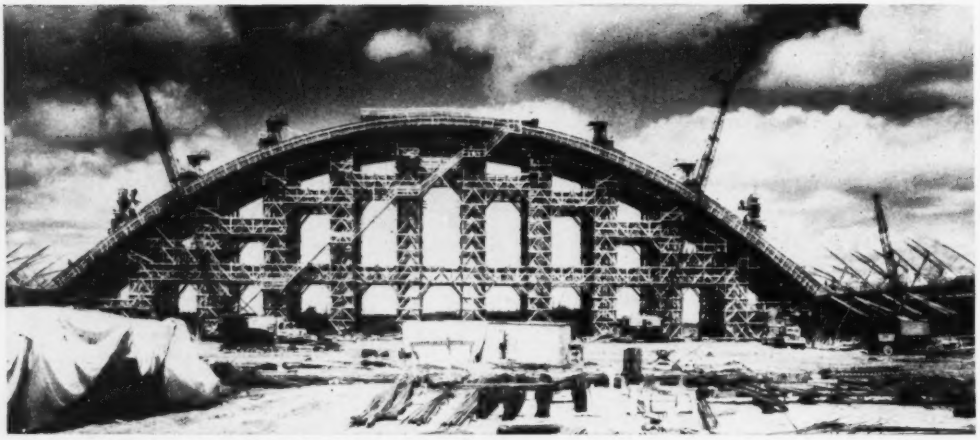
When outdoor work became practicable, the contractors began to erect the movable 280,000-bd.-ft. arch centering between the northernmost three pairs of abutments (for 50-ft. hangar length.)

Falsework consisted of ten bents at right angles to the ribs (see illustration). Each bent had two rows of eight 6x6-in. columns, arranged with two columns per row under each of three arch ribs and one per row under the center of each slab. Bents were braced both ways, as shown in the accompanying illustration, with 2x6 diagonals and 3x6 horizontals. Bents were inter-connected by two separate stiffening trusses in each bay. At the sides a single falsework truss was built to full span width. Connection was by 40-d nails, bolts and, in the side trusses, by split-ring connectors.

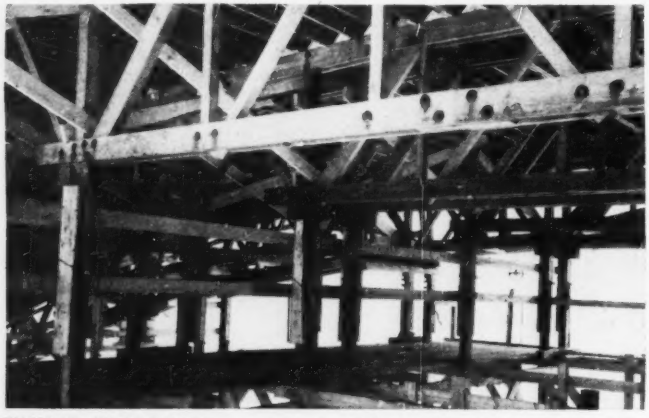
Eight rows of ribwise trusses above the falsework, each truss supported by a pair of facing columns on adjacent bents, carried 2x10 purlins which in turn carried ¾-in. form plywood and rib forms. Forms were centered and de-centered by screw jacks between falsework columns and form-truss end posts, as shown.

For primary support at ground level, each falsework column was double-wedged on a 4-ft. 12x12 timber resting on a 4-ft. by 4-ft. piece of 3-in. steel plate on the subgrade.

Scaffold movement was on 12 rails, one at the center line of each bent and one at the outer end of each falsework side truss. Seven double-flange wheels, in line, were built into the scaffold. Rail jacks, one to a wheel, removed



POURING THE FIRST ARCH SECTION. As concreting proceeded upward, 120-ft. boom cranes with 25-ft. jibs hoisted buckets to successive pairs of 1-yd. hoppers. The lowest hoppers were moved to the top pair of runs (ends of top railing) for completion of the continuous pour. Two 27-E pavers near the abutments mixed concrete and delivered it to buckets.



HANGAR ARCH FORMS were centered and de-centered primarily by 176 of the 15-ton screw jacks between falsework columns and form truss end posts.

the load from the wheels and held the centering up so that the load could be transferred to the primary supports.

For placing the arch concrete, two old 27-E pavers spotted near the abutments fed into 1-yd. buckets that were hoisted to hoppers by a pair of crawler cranes with 120-ft. booms and 25-ft. jibs. (Transit-mix trucks were at hand in case of a paver breakdown). There were three hoppers on each side, at successive levels.

From the hoppers, concrete was carried in rubber-tired buggies, on runs to chutes. Ordinary vibration was used, and finishers wood-floated the roof, steel-troweled the ribs.

The contractors chose crane hoisting in preference to towers because of the infrequency of pours and the necessity of moving hoisting equipment for each pour. The long booms handled the concrete without mishap.

In case of rain, roof slab concrete was covered as soon as it was finished, mostly with heavy building paper, which was kept handy in loose rolls the length of the space between the ribs. Ribs were covered with tarpaulins. A sealing compound was sprayed on the concrete as soon as it set.

The time for de-centering arch forms was controlled by the time it took the concrete to attain 2500 psi. compressive strength. In general four days was sufficient. The concrete was proportioned for a 28 day strength of 3750 psi.

Once the forms were lowered and about 2 in. in the clear, primary supports were removed and the timber assembly was rail-jacked down ½ in. onto the rails. Powered by a crane drum operating through a wire rope hitch the rig emerged slowly from the new shell. As it moved, electricians and concrete finishers working on a catwalk at the trailing edge, performed necessary operations on the ceiling. The ceiling had only a small amount of honeycomb and even that condition improved with successive pours.

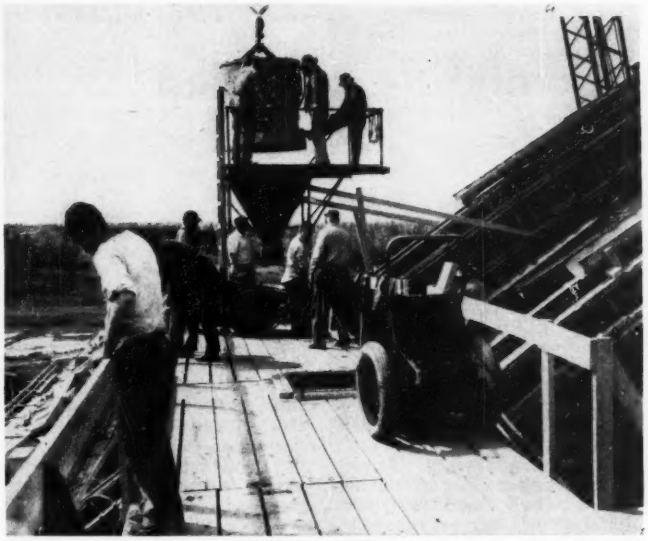
Meanwhile, a gravel fill was placed and compacted in the hangar floor base. This operation preceded trench excavation for floor utilities, to prevent pipe breakage and uneven compaction. End enclosure and floor paving were the final major operations.

Equipment on the job

At the peak of operations, about $5,000,000 worth of equipment was on the job. Twenty-eight percent was army-owned, 36 percent was contractor-owned and 36 percent was third-party-owned. The in-shop percentage ran about 10 percent. Numbers of items include: 13-yd. bottom-dump wagons, 38; dump trucks, 145; crawler tractors, 100; 15-yd. four-wheel tractor-scrapers, 13; 15-yd. carrying scrapers, 15; shovels and cranes, 26 of ¾ yd. to 3½ yd. size.

Fixed plant included the gravel plant, quarry crushing plant, two asphalt plants, aggregate batcher and bulk cement bin.

In addition, at the beginning of the



CONCRETE PLACEMENT. Most of the concrete was chuted from the run into forms. (At right, note chute from next run up.) Men spotting bucket grasp safety rail.

job, three 187½ kva. motor generators were brought in from another army post. These were installed in a temporary plant, to light the camp and some construction operations, and to power the asphalt plant.

During the 1947-48 winter, surplus power from these three generators was sold to the Maine Public Service Company to aid in the shortage created by the influx of workers for the job.

Limestone Air Force Base is being built for the Air Force by the U. S. Corp of Engineers, with general planning by the office of the Chief of Engineers. Brig. Gen. Raymond G. Moses was New England division engineer during most of the project, and he was succeeded by Col. James H. Stratton. Lt. Col. G. W. Carlson is assistant division engineer. Robert E. Lee and D. M. Mills head up the Army force in the field; E. D. Moore and H. W. Davis are project manager and assistant project manager for Lane and Cunningham, with J. H. Wylde as general superintendent on earthwork and Frank Davis as general superintendent on the buildings.

The hangar and its twin at Rapid City, S. D. were designed by Roberts and Schaefer Co., Chicago.

Notes on Legal Decisions

Summaries of decisions relating to construction prepared by I. Vernon Werbin, counselor at law and engineer, New York

Corporate Contractors

A corporation is created by virtue of state law, and as a general rule has no authority to do business in any state other than the one of its incorporation. Most states have statutes that prohibit foreign corporations from maintaining any action in the state on any contract made by it in the state, unless before entering into the contract it has obtained a license or authority to do business in that state. Corporate contractors, before entering into contracts to perform work in states other than the one of its incorporation, should obtain authority to do business in that state, otherwise it might find itself in a position, in the event a dispute arises, of not being able to maintain an action to recover for work done under the contract.

The following cases will illustrate the application of the rule:

In Amos D. Bridges Sons, Inc. v. State of New York,[1] the plaintiff, a foreign corporation, entered into a contract with the State of New York to construct a highway for the state. After the work was completed, it filed a claim "for additional expenses of performance due to the fault of the state." The court held that plaintiff, having failed to obtain a license to do business in the State of New York, could not maintain an action to recover the damages in question.

A Georgia corporation entered into a contract with defendant for doing decorating and installing certain fixtures in its bank building located in the state of Alabama. After the work was completed and before the contractor received the final payment due under the contract, a dispute arose as to extra work. The contractor, having failed to obtain authority to do business in the state of Alabama, was denied a recovery, not alone for the extra work, but also the balance due under the contract.[2]

The Talley-Bates Construction Co. entered into a contract for doing some railroad construction work, part of which was to be done in the state of Alabama. The firm was an Illinois corporation and did not obtain authority to do business in the State of Alabama, as it did not think it necessary since it had sub-let the part of the work to be done in Alabama to an Alabama corporation. A dispute arose under the contract and in an action brought by the general contractor is was denied a recovery, the court holding that though it had sublet the part of the work to be done in Alabama, it had been "engaged in the exercise of its corporate functions in this state, notwithstanding it employed independent sub-contractors to do the actual work."[3]

The legal effect of having failed to obtain a license to do business in another state cannot be circumvented by resorting to federal courts,[4] nor by the fact that work is being done for the government.[5]

The above are but a few of the many cases that might be cited to show the necessity for corporate contractors seeking legal advice before submitting bids to do work in states other than the one of their incorporation. In some states the statutes require the taking out of a license even before the bid for the job is submitted, while in others the license is required only to be had at the time the contract is entered into.

(1) Amos D. Bridges Sons, Inc. v. State of New York, 188 App. Div. 500, 177 N.Y.S. 3, affirmed 231 N.Y. 532, 132 N.E. 876.
(2) George W. Muller Mfg. Co. v. First National Bank, Dothan, 176 Ala. 229, 57 So. 762.
(3) Alabama Western Railroad Co. v. Talley Bates Const. Co., 162 Ala. 396, 50 So. 341.
(4) Erie Railroad v. Tompkins, 304 U.S. 64, 82 L. ed. 1188.
(5) James Stewart & Co., v. Sadrakula, 309 U.S. 94, 84 L. ed. 596.

Siliceous Admixture Specified For Davis Dam Concrete

J. L. Gilliland and W. T. Moran

Engineers, U. S. Bureau of Reclamation, Denver, Colo.

Editor's Note—This is the second of two articles on concrete operations at Davis Dam. The first appeared in ENR January 20, p. 83.

BUREAU OF RECLAMATION specifications for the Davis Dam concrete require the use of a siliceous admixture. This measure was adopted in addition to the normal precaution of specifying low-alkali cement (having total alkali content of less than 0.60 percent computed as Na_2O).

Field experience and service records of concrete in which cements of low-alkali contents and reactive aggregates were employed have not indicated that excessive expansions will occur. However, a number of long-time laboratory tests have indicated that expansions of destructive order are possible with some aggregates when used with comparatively low-alkali cement. To prevent reactions that might occur in the completed Davis Dam structures, a calcined, Puente shale was selected as an effective admixture in counteracting alkali-aggregate expansion.

Modern day usage of siliceous admixtures or pozzolanic materials in portland cement concrete has resulted from recognition of several advantages in the properties of the resulting concrete. Although Davis Dam is the first U. S. Bureau of Reclamation use primarily to control reaction between cement alkalies and reactive aggregates, other advantages have dictated the specification of siliceous materials for other massive concrete structures. Such advantages include reduced or more favorable rate of heat generation in mass concrete, reduced leaching, and economy.

CRACKING DUE TO ALKALI-AGGREGATE REACTION in a dam located in southwestern United States. The large crack in the center is 1¾ in. wide at the top.

Previous USBR use

Siliceous admixtures were first used by the USBR in 1912-16 when a "sand-cement" was used in Arrowrock Dam on the Boise River in Idaho, and in the Elephant Butte Dam on the Rio Grande River in New Mexico. The cement used at Arrowrock Dam was a blend of 45 parts granite to 55 parts normal cement, interground in tube mills at the damsite to a fineness of 90 percent passing the 200-mesh sieve. At Elephant Butte Dam, the cement was a blend of 48 percent sandstone and 52 percent portland cement, prepared in a similar manner. Recent studies have classed these materials as relatively inactive; however, a low cement content was permitted and this resulted in reduced heat generation.

Recent examinations show that the dams have suffered little disintegration, except for the downstream face of Arrowrock Dam, where the continuous spray from the outlet works brought about a severe freezing and thawing exposure.

High-silica cement prepared from calcined shale and portland cement was proposed for Hoover Dam. At that time, the question of an adequate supply of the high-silica cement influenced the decision to use the then newly developed low-heat portland cement. This was because there was no assurance that high-silica cement was available in quantity from more than one producer and all manufac-

turers could furnish low-heat portland cement.

The immense size of Grand Coulee Dam (11,000,000 bbl. of cement) caused the bureau to consider the advisability of using a portland-pozzolan cement, and to investigate the possible sources of active materials. Several suitable materials were found, but the supply of portland cement was found to be adequate for the proposed construction rate, and at a price which eliminated any economic grounds for using pozzolans. However, the information gained from investigations of materials of this nature provided a valuable background for the subsequent use of pumicite at Friant Dam in California and Altus Dam in Oklahoma.

Both the Friant and the Altus pumicite deposits were unconsolidated and naturally fine, so that no processing was required. At Altus Dam, the amount of pumicite used was 35 percent by weight of the portland cement. At Friant, 20 percent by weight was used. The Friant deposit was within the reservoir area and had to be acquired for right-of-way. Thus, economics shared with reduced heat generation in the decision favoring its use.

The alkali-aggregate problem

The effects of the alkali-aggregate reaction have been thoroughly described. The USBR's original and most distressing experience with this problem was at Parker Dam on the Colorado River (ENR March 27, 1941, vol. p. 462). Other structures built with aggregates from the same source show the characteristic cracking where high-alkali cement was used. In those localities where the aggregate deposits contain sufficient reactive material to constitute a problem, low-alkali cement is now specified as a matter of course.

Another approach where low-alkali cement production capacity is limited has been to utilize admixtures that will react with the cement alkalies and thus prevent subsequent expansion. Such admixtures usually consist of fine siliceous materials. As a matter of fact, it has been found that materials effectively combating the alkali-aggregate reaction are pozzolanic materials. However, the converse is not necessarily true, not all pozzolans prevent expansion.

Petrographic examination has rated 45 percent of the coarse aggregate (larger than ¾ in.) used at Davis Dam as being deleterious, i.e., reactive with high-alkali cement. Mortar bar tests show excessive expansion for combinations of the sand and high-alkali cement. Due to the nature of aggregate in this general vicinity, the use of a low-alkali cement in the concrete was mandatory.

MICROFRACTURES IN A CORE taken from concrete affected by alkali-aggregate. Reaction is revealed by dusting the core end with phosphorescent powder and photographing the core under ultraviolet light.

Long-time laboratory tests have indicated that excessive expansions may be obtained over a long period even though a low-alkali cement is employed (ASTM Proceedings, 1947, p. 986). As mentioned previously, however, some siliceous materials have been found to be very effective in preventing destructive expansion. In considering this evidence, all available tests were carefully studied. Of the materials that had been investigated, certain shales from southern California (Monterey shale and Puente shales), calcined to increase the activity of the resultant product and to reduce the mixing water requirement, were outstanding in counteracting the reaction.

Fortunately the Puente shale was geographically available near Davis Dam. Ultimately 30,000 tons of this calcined material will be purchased under specifications designed to obtain it or one of equal effectiveness. It is now being used to replace 20 percent by weight of the portland cement. The cost of the material is approximately equal to the cost of an equivalent volume of portland cement, so that no immediate economy is realized. However, this added insurance at no additional expenditure is considered to be well worth any extra amount of labor entailed.

TABLE I—DAVIS DAM CONCRETE DATA FOR TYPICAL CONCRETE BATCH

Ratios

Water to cement plus calcined shale	0.62
Aggregate to cement plus calcined shale	9.48
Gravel to sand	3.00

Material	Amount
Cement (lb./cu. yd.)	309
Calcined shale (lb./cu. yd.)	62
Water (lb./cu. yd.)	215
Sand (%)	25
#4 Sieve-½" (%)	10
½"-1¼" (%)	24
1¼"-2½" (%)	21
2½"-6" (%)	20
Aggregate is water saturated, surface dry.	
Resulting slump—2 in.	

Admixture specifications

The word "pozzolan" was purposely avoided when the specifications were written to purchase calcined shale for Davis Dam. Instead, the material was described as "calcined reactive siliceous material" because it was realized that many pozzolanic materials would not meet the detailed requirements of the specifications. Actually, the detail requirements were deliberately written to describe a type of material which had been demonstrated to have the desired properties. Calcination was required because it had been found that heat treatment was necessary to develop these properties to the fullest extent. In spite of the fact that the use of the term "pozzolan" was avoided, the comments inspired by these specifications make it apparent that some investigators are improperly applying the detail requirements to pozzolanic materials in general.

The specifications may be conveniently divided into three types of detail requirements as follows:

1. Geological description and geographical location of acceptable deposits.
2. Chemical composition and physical properties.
3. Activity tests.

Under the first of these, the raw materials from which the siliceous material could be produced was limited to cherty shale, chert, or porcelaneous rock. These have to be high in opal content such as those found in the Monterey formation or other Miocene strata of similar lithology. The Puente formation in the vicinity of Pomona, Calif., fills the requirements.

Raw material calcined at 1,400 deg.

It was required that the raw material be thoroughly calcined at a temperature of not less than 1,400 deg. F. Limitations on chemical composition and physical properties are shown in Table II.

Calcination and fineness improve the activity of the shale, making it more effective in reducing expansion

resulting from alkali-aggregate reaction. Actually, the calcined shale pulverizes readily, so that a product having a fineness considerably above 8,000 sq. cm. per gram is being obtained.

The limits on iron oxide and specific gravity eliminate materials such as diatomaceous earth. This might meet other chemical and physical limits but it would greatly increase the water requirement. Other limitations are based on test results obtained on typical shales known to be satisfactory.

Three activity tests

Three types of activity tests were included, the last two of which are recent laboratory developments. These are (a) a strength test, (b) a reduction-in-alkalinity test, and (c) a reduction-in-expansion test. Additional details on all three tests follow:

(a). LIME-POZZOLAN STRENGTH TEST. The strength test requires that the 2x4-in. cylinders fabricated from lime, sand, water, and reactive material should have a 7-day strength of not less than 600 psi. after sealed storage for 1 day at 70 deg. F. followed by 6 days at 130 deg. F. The strength requirements are intended to assure obtaining a material that will contribute to the continuing strength gain of the concrete, i.e., a pozzolanic material. The lime-mortar strength test has been used previously, notably in the Bonneville Dam specifications.

(b). REDUCTION-IN-ALKALINITY TEST. This chemical solubility test was adopted from studies made to establish a rapid chemical method for determining the reactivity of aggregates with cement alkalies (ACI Journal, 1947, p. 193). In this test, the material is allowed to react for 24 hours with a solution of sodium hydroxide at an elevated temperature (80 deg. C.). The liquid and solid phases are then separated. When used to judge the deleterious character of aggregates, it has been found joint consideration must be given to (1) the reduction in the alkalinity of the solution and (2) the quantity of silica dissolved by the caustic solution. When considering the effectiveness of a wide group of pozzolanic materials in inhibiting alkali-aggregate reaction, these same two items must be considered jointly. However, in the specifications for Davis Dam, a limit was placed on alkalinity reduction only because the activity of the particular shale specified for use was known to correlate directly with the single determination alone.

(c). REDUCTION-IN-EXPANSION TEST. The reason for using a reactive siliceous admixture at Davis Dam is to counteract any abnormal expansion. Thus a specification test to establish the reduction-in-expansion ability of the material being purchased is a practical test. A basic requirement for any test of this sort is that a uniform supply of deleterious aggregate must be available. However, natural deposits of reactive aggregates are not sufficiently uniform for this purpose. Inasmuch as natural volcanic glasses constituted one class of reactive aggregates, synthetic siliceous glasses were tried and were found to be highly reactive. The next point was to decide what glass of uniform composition was most readily available. Pyrex No. 774 was chosen. This is the standard Pyrex glass used for laboratory and domestic ware, and for industrial piping. It is available as "lump cullet" from the Corning Glass Works, Corning, N. Y. The technique now in use is to prepare, by crushing, screening, and washing, a fine aggregate composed of 20 percent of each of the five sizes from 8 mesh to 100 mesh. Fines passing the 100-mesh screen are discarded because they tend to reduce the expansion. Mortar bars are fabricated of high-alkali cement and glass aggregate with the siliceous material under test used to replace 20 perecent by weight of the cement. The bars are stored under sealed moist storage, and the expansion determined at 14 days. Acceptable materials are required to show a reduction of 75 percent in the amount of expansion obtained, as compared with specimens made without the siliceous admixture.

Acceptance tests on the Davis Dam siliceous admixture show that there have been remarkably few infractions of the specifications limits, particularly when it is considered that calcining and grinding are the only manufacturing operations susceptible to control. The averages, maximums, and mimimums of several of the more important detail requirements for 9,000 tons of the Davis Dam admixture are shown in Table III.

The calcined shale is handled just as cement is handled, one of the storage bins originally intended for cement being used for this purpose. No other admixture is being used.

TABLE II—DAVIS DAM CONCRETE—CALCINED SHALE REQUIREMENTS

Fineness (sq.cm./gm.)*	not less	than	8,000
Specific gravity	not less	than	2.3
SiO_2 (%)	not less	than	60.0
Fe_2O_3 (%)	not less	than	2.0
Al_2O_3 (%)	not less	than	15.0
CaO (%)	not more	than	10.0
MgO (%)	not more	than	4.0
$Na_2O + K_2O$ (%)	not more	than	4.0
Water-soluble material (%)	not more	than	1.0
Water-soluble alkalies (%)	not more	than	0.1
Loss on ignition (%)	not more	than	7.0
Moisture content (%)	not more	than	3.0

*Blaine Air-permeability Apparatus

TABLE III—DAVIS DAM CONCRETE TEST RESULTS ON CALCINED SHALE ADMIXTURE

	Aver.	Max.	Min.	Min. Spec. Limits
Fineness (sq.cm./gm.)	12,710	14,910	11,040	8,000
Strength (psi.)	1,470	1,760	1,115	600
Reduction in alkalinity (%)	54	61	49	40
Reduction in expansion (%)	80	90	67*	75

*Failed specifications

Organization

Davis Dam is being built by the Bureau of Reclamation. All design and construction work is under the direction of L. N. McClellan, chief engineer, located at Denver, Colo. E. A. Moritz is regional director, Region III, Boulder City, Nev., and H. F. Bahmeier is construction engineer at Davis Dam.

The Utah Construction Co. is the contractor, for whom H. E. Williams is project manager and T. L. Terry is general superintendent.

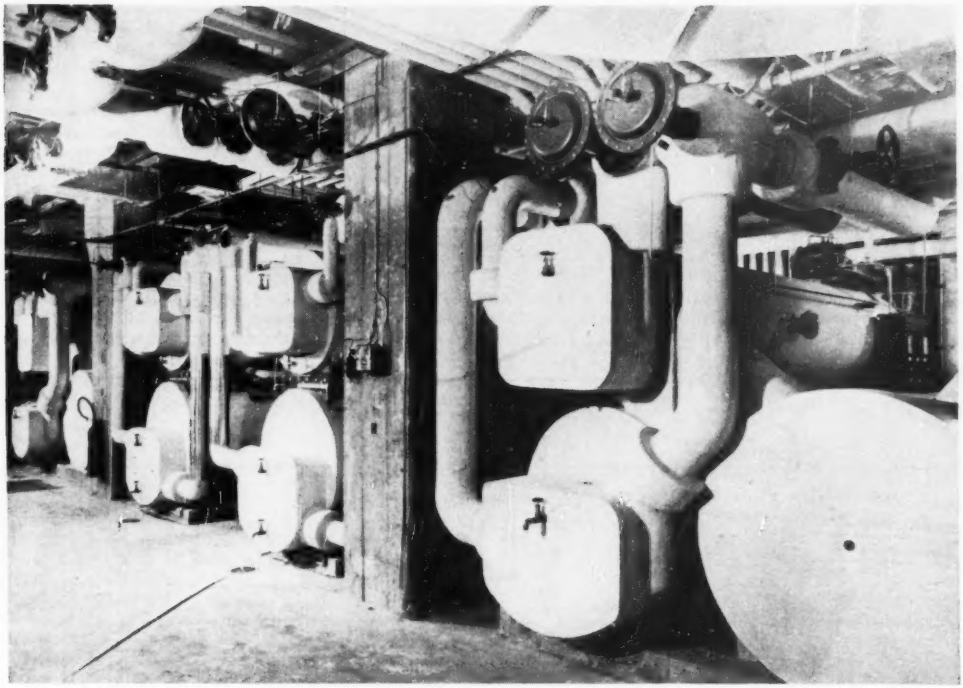


FIG. 1. REFRIGERATION MACHINES are the heart of the heat installation in the Equitable Building (The Trane Co. photo)

Heat Pump Conditions 12-Story Building

MOST INTRIGUING of a number of design features that distinguish a new 12-story office building in Portland, Ore., is the air-conditioning installation. In cold weather, heat pumps extract heat from well water to warm the air, and in hot weather, heat is discharged into well water to cool the air.

Other noteworthy elements of the design include: The use of aluminum facing and immovable, double-glazed windows for the exterior walls; lightweight aggregate (perlite) in the plaster (ENR Feb. 5, vol. p. 168); and cold-cathode lamps for interior lighting. The structure has so much window area that, from the street, it appears to be transparent (Fig. 6).

Constructed at a cost of $2,500,000 for Equitable Savings & Loan Assn., which has its own banking rooms on the street floor, the building contains 11 floors of rental office space, a basement and two penthouse levels. It was designed for year-round air conditioning. In some seasons, cooling is provided in some zones in the building, heating in others.

Reversed-cycle refrigeration

Winter heating is accomplished through the use of heat pumps, which are essentially refrigeration machines. Although this method of heating is sometimes referred to as reversed-cycle refrigeration, the refrigerant cycle is not actually reversed. As compared with an ordinary household refrigerator—where heat is extracted from the air in the refrigerator and discharged to the outside air by a condenser—heat is taken from well-water and supplied to the building through the release of heat from the condenser.

In brief, here is how the heat pump works: A refrigerant, in a gaseous state, is compressed and passed into a condenser, where it is cooled and condensed. The heat extracted by this process is then used to raise the temperature of water circulated in the building's heating system. Fed into the shell of an evaporator, the liquid refrigerant evaporates, the heat needed for evaporation being absorbed from well water flowing through the evaporator coils. The superheated gas then is returned to the compressor, completing the cycle, and the cooled well water is wasted.

The heat-pump installation in the Equitable Building employs two 200-ton and two 70-ton capacity condensing units of the hermetically sealed, diffusion-centrifugal, constant-speed type, with Freon as the refrigerant. The heat source is well-water pumped from two warm wells, roughly 150 ft. deep, one at 64½ deg. F. at 195 gpm. and the other at 62½ deg. F. at 450 gpm. After passing through the evaporators, this water is disposed to a 57-deg. F. 510-ft. deep well. When required, water pumped at 700 gpm. from the 57-deg. well serves as the cooling source.

The refrigerating machines are lo-

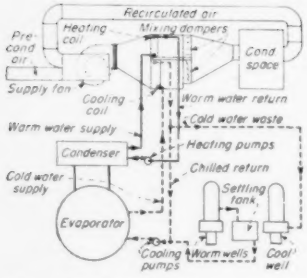


FIG. 2. FOR HEATING, the condenser circuit is closed and the evaporator system is open. Diagram is greatly simplified.

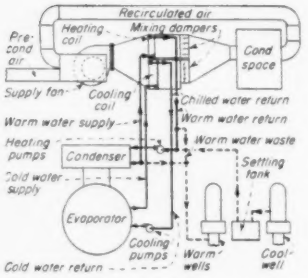


FIG. 3. FOR COOLING (outside temperature under 75 deg.) when some heating is needed. The cooling circuit is closed.

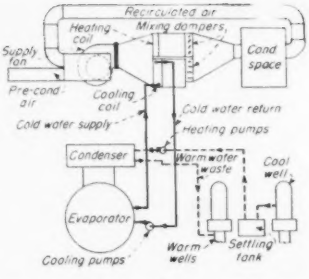


FIG. 4. FOR COOLING (outside temperature over 75 deg.), the cooling circuit is closed, heating system open.

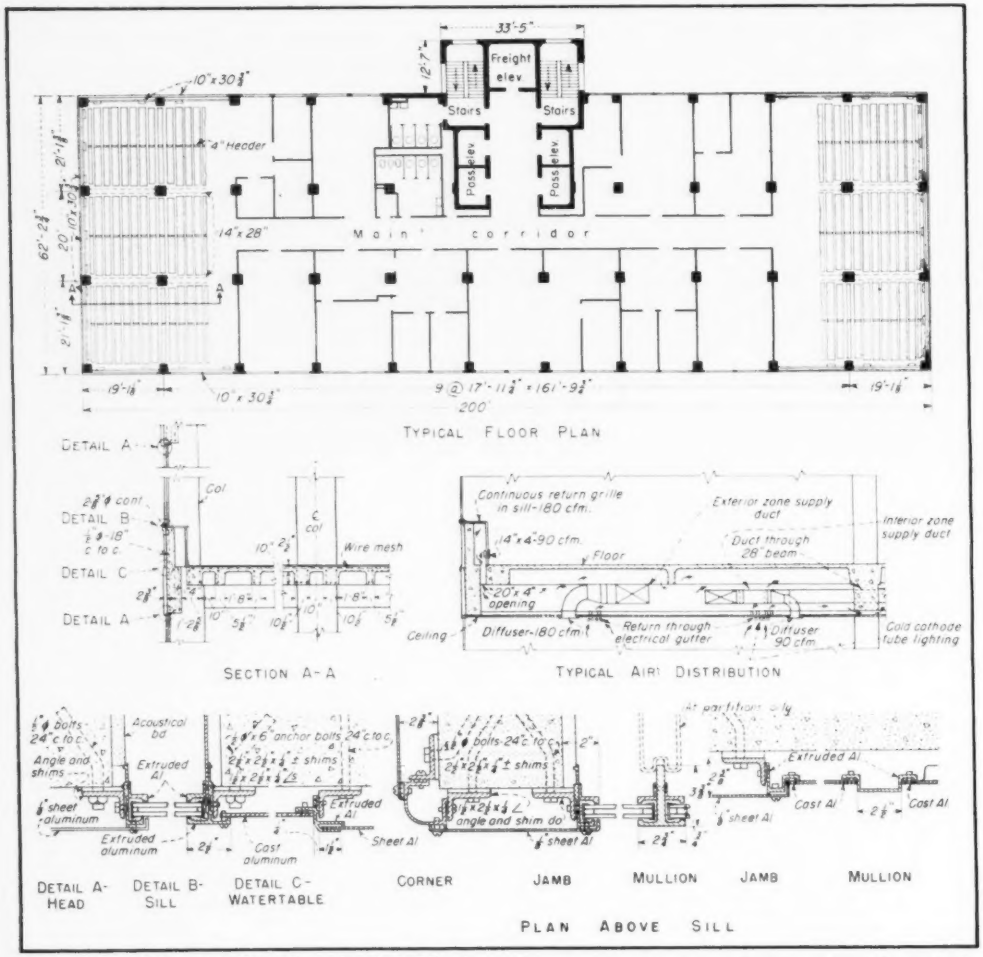


FIG. 5. PLAN AND SECTIONS indicate that the building has a reinforced concrete frame, with an exterior facing of aluminum. Rolled sheets are used, except for the three panels of cast aluminum covering the apron wall under each window and the extruded shapes for holding the facing (details at bottom). Air ducts are located between floor and ceiling in every story.

cated in the basement. From there, warmed or cooled water is pumped to heat exchangers on each floor for conditioning the air. The flow diagram is shown in greatly simplified form in Fig. 2 to 4.

Three conditions considered

When heating is the greater load, the condenser or warm-water circuit is a closed system, with a thermostat in the return selecting the condensing units to be operated (Fig. 2). At this time, the evaporator system is an open one, where well water is added and wasted as required. The cold water is circulated to cooling coils in the fan unit and then, after recovering heat from exhaust air and in turn heating ventilation air (not shown in simplified diagrams), is wasted to the casing of the cool well.

At design heating conditions—10 deg. F. dry bulb outside—water leaves the condenser at 101 deg. and returns at 86 deg. On the cold-water side, 600 gpm. at an average temperature of 63.6 deg. is injected into the cold return to give 900 gpm. of 58.7-deg. water. It leaves the evaporator at 50.4 deg. In the cooling and heating coils, its temperature is raised to an average of 54 deg. Then, lowered to 49 deg. in the preconditioning coils, 600 gpm. is wasted, the remainder recirculated.

When the cooling load is the greater, an immersion thermostat in the return from the cooling coils takes command of the condensing unit operation. Certain valves are re-positioned, and the cold-water circuit becomes a closed system.

Until temperatures outside the building exceed 75 deg., both cooling and heating are required (Fig. 3). Water is pumped by the cooling pumps through the evaporator section of the compressors, through the cooling coils on each floor bypassing the recovery coil, and then recirculated through the closed system. Meanwhile, well water at 57 deg. is pumped into the heating circuit which under these conditions recirculates or discharges to the warm wells when necessary. The heating coils are used or bypassed as the demand in each zone of the building requires.

When the temperature outside is above 75 deg., cold water is pumped through the evaporator section of the compressors (Fig. 4). Flowing through the cooling coils, the water bypasses the recovery coils and circulates through the preconditioning coils, precooling the make-up air before the air passes over the cooling coils. The water is then recirculated through the evaporator circuit, which remains a closed system.

FIG. 6. THE EQUITABLE BUILDING has double-glazed windows throughout, with outer panes of heat-absorbing glass. (Roger Sturtevant—Pictorial Service photo)

The heating circuit is open under these conditions, and the heating coils are completely bypassed. Well water at 57 deg. F. is pumped through the heating circuit and then wasted to the other two wells. Under these conditions, the compressors are not used as a heat pump, since no heating use is made of the water from the condenser section of the compressor. At design cooling conditions—95 deg. F. dry bulb, 70 deg. wet bulb—the cold water supply is at 42 deg. and the return 56.4 deg., 600 gpm. of well water at 57 deg. being supplied to the condensers and rejected at 83 deg.

Method of circulating air

Conditioned air is distributed through ducts concealed in furred ceiling spaces and through ceiling diffusers (Fig. 5). Supply fan and coil equipment for the typical floors are located above the toilet rooms and the exhaust fans over the lobby, these being the only places on each floor with reduced ceiling heights. Return air, which may be exhausted or recirculated, is drawn through a continuous grille in the window sill and the perforated flanges of the wire gutters supporting the cold-cathode lighting. The air then passes into the furred ceiling spaces, which serve as recirculation plenums.

Mixing of air for each floor is controlled by eleven zone thermostats, and dehumidification is controlled by a humidistat in each story. (Maximum room humidity is limited to 55 percent.)

If it is desired, 100 percent outside air can be used for flushing. From March to November many days occur during which outside air may be used exclusively for at least half a day, thus

FIG. 7. OFFICES are illuminated by cold-cathode fluorescent lamps. Ceilings are acoustic tile. (The Trane Co. photos)

reducing the load on the heat pump.

This is the first commercial heat-pump installation in which an auxiliary heating system has not been included. Another unusual feature is that the operation is completely automatic.

Cost studies made

Selection of this installation was based on studies of initial and operating costs, which demonstrated the economical feasibility of using a heat pump for heating. Cost of the installation complete was $0.29 per cu. ft., or roughly $1,250 per rated ton. On the basis of a coefficient of performance for heating of 3.5 (heat supplied to the building would be 3.5 times the equivalent of the electric energy used to drive the heat-pump motors), a 7-mill per kwh. power rate, and a weighted value of waste cold-water utilization, a cost of $0.46 per million Btu. for heating was estimated. The applicable rate indicated for district steam, which was available, was 22 percent higher. Steam rates have increased since that time, whereas power rates have declined.

A complete description of this heat-pump installation and a discussion of the cost comparison was given in a paper, "A Heat Pump in an Office Building," by J. Donald Kroeker and Ray C. Chewning, presented at the 54th annual meeting of the American Society of Heating and Ventilating Engineers, New York, N. Y., Feb., 1948.

Although eclipsed by the novelty of the heat-pump installation, other elements of the building are nearly as unconventional. To better appreciate these features, it is necessary first to visualize the general construction of the building.

The structure rises 200 ft. above the street, provides 212,000 sq. ft. of floor and incloses a volume of 2,275,000 cu. ft. At street level, it is 100x200 ft. in plan, but a third-floor setback at the rear of the building reduces these dimensions to 62x200 ft. Typical floor-to-floor height above the second floor is 12 ft. 3 in. In all, twelve floors and two penthouse levels are provided for office use.

FIG. 8. PUMPS such as this one raise water from deep wells for use as a source of heat or cold.

The building has a reinforced concrete frame, with columns spaced about 18x20 ft. One-way metal-pan joist floors of 2,000-lb. concrete are used from the fourth to the twelfth floors (Fig. 5).

Below the second floor, the exterior of the building is faced with marble; but above where the columns and walls are flush on the outside, the facing is aluminum. Except for three panels of cast aluminum covering the apron wall under each window, the concrete frame is faced with rolled aluminum sheets (Fig. 5). The facing is fastened to extruded aluminum sections, which in turn are connected to angles anchored in the concrete wall.

The windows are set in aluminum frames and are nonoperable, except for those having access to fire escapes. Spanning from column to column, the glass was installed in two sheets per bay.

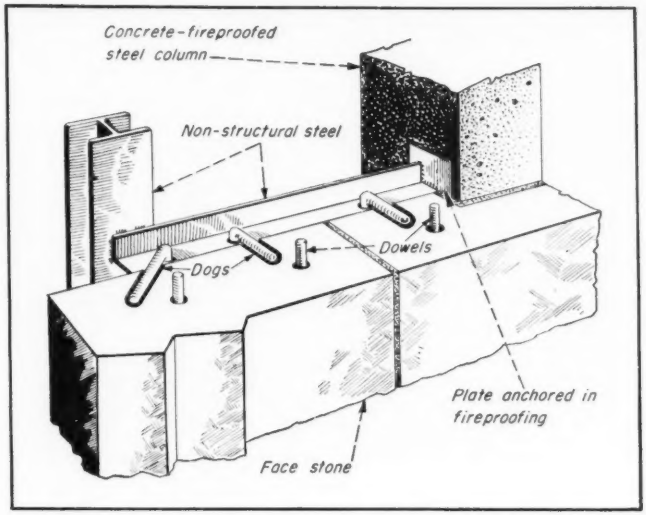
The windows are of the double-glazed type, with an hermetically sealed air space between panes for insulation purposes. Giving a greenish tint to the windows, the outer pane is ¼-in. thick, heat-absorbing glass, which is said to be 40 percent more opaque to solar heat than ordinary glass. This was an important factor in the selection of this installation, because an air-conditioned building in Portland's mild climate has a much bigger solar heat load in summer than cold load in winter.

Provisions for light and power

The installation of electrical, telephone and signal systems in the Equitable Building is also outstanding. Planned for flexibility, the wiring is carried in ducts that run the entire length of the building on 8-ft. centers and form part of the perforated suspended ceiling. The electric and telephone ducts are tapped for outlets by drilling through the floor above.

Ducts carrying the lighting circuit for the continuous rows of 8-ft. long, cold-cathode tubes permit fixtures to be hung in a wide variety of patterns. Cover plates mask unused portions, receive partitions and support lighting fixtures. A feature of the design is the flexibility of repartitioning office space without affecting mechanical and electrical factors.

The building was designed for Equitable Savings & Loan by Pietro Belluschi, architect. J. Donald Kroeker was mechanical engineer and Ross B. Hammond general contractor.



GALVANIZED DOGS TIE FACE STONE to light steel framing. Tubular brass ¾-in. dowels are used to tie stones to each other.

Face Stone Earthquake-Anchored On Boston Telephone Building

SPECIAL earthquake anchorage of stone facing to the non-structural steel framing is incorporated in the New England Telephone & Telegraph Co.'s 20-story building now under construction in Boston. (ENR, June 24, 1948, vol. p. 1018, 1022).

Resistance to lateral displacement due to earthquake horizontal acceleration equal to 20 percent gravity is provided by ⅞-in. galvanized iron dogs tying alternate courses of stone to light grids of tee and H steel. In addition, stone courses are doweled to each other by ¾-in. brass pipe 4 in. long.

A typical 15 ft. x 20 ft. exterior panel carries seven stone courses. Window opening widths at the center of the panel are 7 ft. wide in the lower five stories and 4 ft. 4 in. in the upper stories. Earthquake anchorage steel consists of two vertical WF sections 8 in. at 24 lb. Centered 1 ft. 6 in. from the right and left window lines, and of six horizontal half-WF tees 4 in. at 8.5 lb., three on each side of the opening, with their webs outstanding 1 in. below the top plane of alternate stone courses.

The light verticals, with webs normal to the building face, are welded at the lower end to plates anchored in spandrel beam fireproofing, and at the top they are bolted lightly to slotted clip angles similarly connected to the beam. This arrangement prevents axial loading on the light verticals. Tees are welded to anchored plates in the column fireproofing at one end and fillet-welded to the verticals at the other end, with the tee flange laid flat on the exterior column flange. For convenience in erecting, plate anchors were tack welded to structural columns before fireproofing forms were erected.

Each stone in an anchor course is tied back in the manner shown by the drawing. One end of the galvanized dog is laid in a hole and groove shop-cut in the stone; the other end is inserted in a ⅞-in. hole shop-punched in the tee web. Dowel holes, factory-cut four to a stone (two top and two bottom), receive the brass tubes. For installation tolerance, all holes in stone are 1¼ in. diameter. Dogs and dowels are grouted in place. Anchorage framing is embedded in back-up brick masonry.

At the fireproofed spandrels, where conventional shelf angles for transferring the stone load to the structural framing occur, a different anchorage is used. A ¾-in. round anchor bar is welded along the outer edge of the outstanding leg of the angle. This bar seats in a corresponding groove in the stone above. A dovetail slot anchor under the shelf angle holds the top of the stone below.

Designed by Cram and Ferguson, Boston, the New England Telephone and Telegraph building is being built by the Turner Construction Co. G. M. Reaves is project manager. H. O. Glidden is the field engineer and Hank Gally is superintendent in charge of construction. Stone cutting details were coordinated with the earthquake anchorage and concrete work by Turner and the Heltonville Limestone Co., Bedford, Ind.

Call Elevators Safest Public Transportation

The chances of injury on elevators are less than 100,000,000 to one—and that figure can be reduced to 680,000,000 to one by safety devices and observance of proper safety regulations.

Completing an annual survey of elevator accidents, the Otis Elevator Co. said that 283 such accidents occurred in the United States during 1947.

Company engineers have concluded that 85 percent of all accidents can be prevented by safety devices and observance of safety rules, adding that slightly more than two-thirds of the serious and fatal accidents occur with old equipment, some of which has been in service twenty years or more without proper devices. About a third of all elevator mishaps occur through stark carelessness—as when people walk heedlessly into open hoistways or because hoistways are not equipped with proper doors.

Few persons were injured while actually riding on elevator cars—only 13 of the 174 passenger elevator accidents reported occurring in the car.

Greatest single cause of injury was falling down open hoistways or shafts. 67 persons fell into passenger elevator shafts, 33 into freight shafts. Main cause of these falls, the report said, is the fact that many old hoistway doors lack adequate interlocking devices to prevent their being opened when a car is not at the landing. Tripping while getting on or off passenger elevators accounted for 22 minor and five serious accidents and one person put his head through a small, unprotected freight elevator door opening with fatal results.

Half of the 26 freight elevator accidents were traced to outmoded hand-rope operation.

Fig. 1. TWO-SPAN BRIDGE, designed for H-20 loading, has concrete deck supported by Bailey-truss stringers. This structure carries Sierra National Forest access road over Bald Mill Creek in California.

Bailey Trusses Used as Bridge Stringers

Richard M. Starns, Jr.
Consulting Engineer, Berkeley, California

FACED with rising construction costs and a shortage of structural steel, Region Five of the U. S. Forest Service turned to army surplus Bailey trusses for urgently needed bridges on high-standard access roads to California's forests. In adapting the wartime temporary units to peacetime permanent use several changes were made. The bridges now meet H-20 loading requirements and conform closely to AASHO standards—yet their total cost was only half that of rolled steel stringer spans.

The chief departure from general wartime practice was to change the Bailey bridges from narrow through trusses decked with timber to wider deck-type structures with reinforced concrete roadways that minimize maintenance costs. The new bridges incorporate the Bailey trusses as stringers, equally spaced beneath the deck slab, with span length and deck width, of course, determining the number of trusses necessary to sustain the H-20 loading. A typical 60-ft. bridge with a 12-ft. roadway (Fig. 3) requires six 10-ft. Bailey panels in each of five stringers for a total of 30 units.

Bracing against lateral forces is provided by the deck slab and by added transverse diaphragms (Fig. 2). The top flanges of the trusses' top chords are embedded ½ in. in the reinforced concrete deck, and stresses are carried to the abutments through portal diaphragm trusses rigidly bolted to the stringer-truss and posts. Intermediate transverse diaphragm trusses at each 10-ft. panel point transmit concentrated loads from any individual stringer to the group as a whole. They not only eliminate deflections that might cause excessive slab stresses, but also create a more rigid structure and brace the bottom chords of the main trusses.

Bolt diaphragms to trusses

The diaphragms were shop welded from light channel and angle iron. They fit the space between the end verticals of abutting Bailey panels and are held by 1¼-in. rolled body

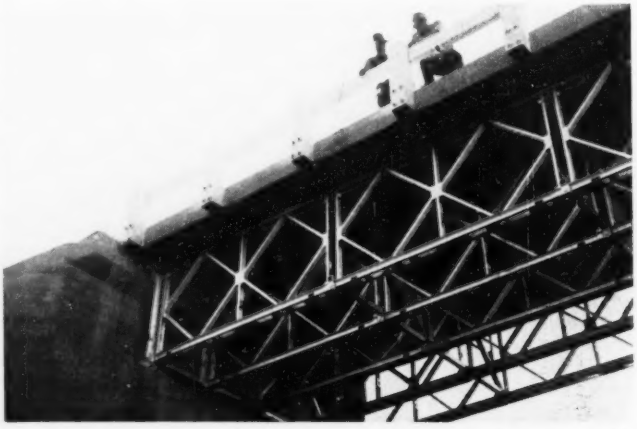


Fig. 2. LATERAL BRACING is provided by embedding top of trusses in deck slab, and by installation of transverse diaphragm trusses at portals and panel points.

bolts through existing holes in panels. Thus, no alterations were required on the Bailey units, themselves. Regular Bailey bearings, with slotted anchor bolt holes and masonry plates at the expansion end, are used on spans up to 70 ft., while rockers were used to provide for expansion in spans greater than 70 ft.

Camber was probably the most difficult problem in the design of the conversion because the connecting-pin clearance at each panel point made it hard to predetermine the truss sag. Therefore, trusses were erected, falsework removed and sag measured. To this figure was added the computed deflection due to the concrete deck poured later. Total camber was provided for in the slab by varying the depth of a 10-in. wide strip of concrete dropped down to engage the top chord of the Bailey truss.

Railroad trestle falsework

Two converted Bailey spans have been erected on roads in the Sierra National Forest where they have shown little live load deflection or vibration under continuous H-20 lumber and logging truck traffic. One is a 60-ft. single-span structure; the other a 120-ft. bridge with two equal spans (Fig. 1).

Construction was easy and rapid due to the Bailey's prefabrication. Both bridges were erected on falsework, which was already in place in the form of old railroad trestles that were cut down to the required height for convenient staging. This erection procedure proved more expedient than the usual method of launching Bailey trusses. For the latter, the entire bridge, being a deck-type structure, would have to be lowered down from the headwall to its bearings after launching. Actually, after abutments and falsework were in place, an 8-man crew erected two 60-ft. spans in only 16 hr. The reinforced concrete deck was then formed and poured in a normal manner.

Bridge costs

The total cost to construct a 60-ft. bridge of this design, by force account, was 50 percent less than for a span with rolled section steel stringers. While this does not reflect a true comparison—due to the purchase of the surplus Baileys at a reduced price—the total weight of structural steel was 31 percent less and manhours spent on steel erection 62 percent less. If the Bailey steel were fabricated new for the job, a great portion of the material costs savings would undoubtedly be offset by higher manufacturing costs due to the intricate nature of the truss. However, where surplus Bailey bridges are available they can be readily altered for economical, permanent spans.

J. J. Burne is regional engineer and W. L. Minaker is chief of the Structural Section for the Division of Engineering, Region Five, U. S. Forest Service. The writer developed the changes to the Bailey bridges described in this article.

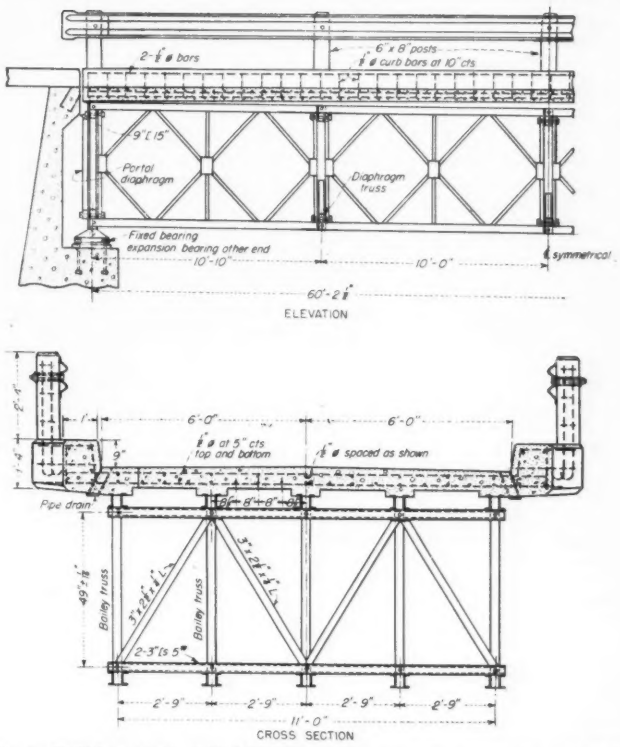


Fig. 3. **TYPICAL 60-FT. STRUCTURE** has five lines of stringers made up of 10-ft. Bailey panels. U. S. Forest Service plans other H-20 bridges with spans from 40 to 80 ft.

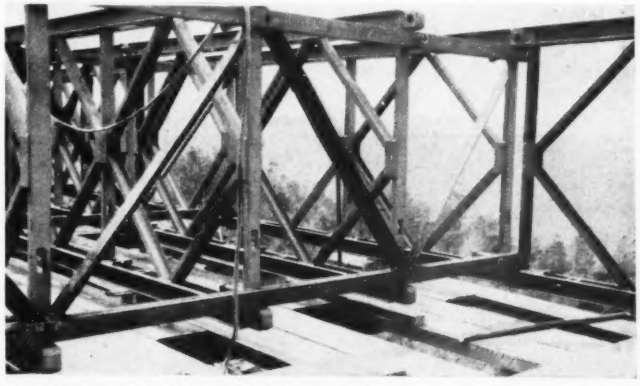


Fig. 4. **READY FOR BOLTING,** intermediate diaphragm trusses are shown in place. The trusses were fabricated in the shop from light channels and angles.

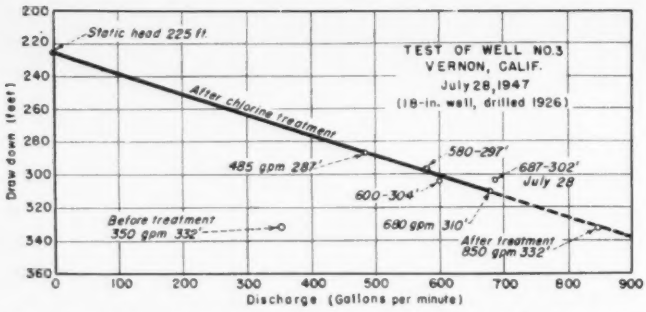


FIG. 1. CHLORINATION OF WELL NO. 3 at Vernon, Calif., resulted in an increase of 330 gpm. in capacity and a decrease of 40 ft. in drawdown.

Chlorinating and Pumping of Wells Increases Specific Yield

CAPACITY OF WATER WELLS that have been clogged by organic growths is reported to be increased from 50 to as much as 1,500 percent by application of chlorine followed by surging and pumping. Four or five cycles of treatment are usually required to regain maximum yield.

Following treatment with chlorine, eight wells of the Dominguez Water Corp., Long Beach, Calif., showed a total increase in yield of 3,870 gal. Previous experiments with sand pumping, surging and chlorine dioxide failed to produce significant improvement.

The amount of chlorine required to disintegrate growths around the screen is determined by diameter of well casing, depth of strata to be treated, age and specific capacity of the well.

Apparently neither the technique of chlorination nor amounts of the chemical may be determined in advance of the work. Each operation must be adapted by trial to conditions existing in each well field.

Cleansing technique

In general, the cleansing technique consists of running a stream of water, highly charged with chlorine, into a well for a period of 24 hours or more. The well is then pumped for about one hour to wash out the micro-organisms destroyed by the chlorine.

The experience of the Dominguez Water Corporation with a group of eight wells in the West Coast Basin—just below the Dominguez Gap in southern California—is instructive. Most of the wells are 12 in. dia. and about 1,000 ft. deep.

A portable chlorinator with a capacity of 175 lb. per hr. was used to deliver the sterilizing chemical to the wells.

Chlorine was introduced into the first well at the rate of about 175 lb. per 24 hr. in a 150-gpm. stream of water. The water was run down inside the well casing for a period of 24 hours. After standing for another 24-hr. period, the well was pumped until the water cleared.

A similar procedure was used on other wells except that the wells were pumped clear immediately after introduction of chlorine was stopped. The latter treatment seemed to be somewhat more effective than allowing the chlorine to stand for 24 hours.

The technique was again modified by applying chlorine for 48 hours followed by immediate pumping. This procedure gave the best results. For the wells near Dominguez Gap, it was found that four or five cycles of chlorine treatment were required to clear the clogging growths.

As a result of chlorination and pumping, not only was the specific gravity of the wells substantially increased but also production of sand was eliminated. The accompanying table indicates how well capacities were improved.

The average cost of treatment was $300.00 per well.

Micro-organic growths

In parts of the coastal basin of southern California, groundwaters contain micro-organisms—such as Creno-

FIG. 2. A PORTABLE STERILIZER injects a heavy dose of chlorine into a stream of water that is fed back into the well casing through the discharge pipe.

FIG. 3. AFTER CHLORINATION, wells are immediately pumped to waste until the water is clear. Waste water is leaked away in an earth-embanked pool.

Well No.	Capacity (gpm.) Before	After	Gain (gpm.)
1	80	1300	1220
2	600	1200	600
3	1100	1300	200
4	800	1200	400
6	50	900	850
8	1000	1200	200
9	600	1000	400
		Total Gain	3870

thrix, leptomitus and other filamentous species—which feed on iron in the water and form colonies around well casings. This results in clogged screens as well as surrounding strata.

Reduction of the micro-organic growths is attributed to disintegration brought about by combination of chlorine and nitrogen. This reaction is followed by dislodgment of particles during surging. The particles are carried to the surface when the well is pumped.

In addition, it is thought the hydrochloric acid formed by addition of chlorine to water cleans the turbine bowls as well as the well column.

Another advantage of well chlorination is a reduction in maintenance cost. By applying chlorine annually to wells, it is estimated that maintenance expense was reduced by at least 50 percent.

The technique of chlorinating wells to increase yield was developed under the direction of Vincent Tallon, superintendent of the Dominguez Water Corporation.

Selecting Topographic Survey Methods

Carlos S. Ospina
Partner, Olarte, Ospina, Arias and Payan
Cali, Colombia, S. A.

BECAUSE so many new devices may be used to speed topographic mapping today, selecting a most effective combination of these devices is becoming quite a task.

A recent article by Profs. Sharp and Palmer (*ENR*, Sept. 30, 1948, p. 75) recommends the altimeter-aerial-photo method. Other methods involve the combination of aerial photos with plane table, spirit leveling and the Stereoplanigraph. The "walkie-talkie" (portable radio-telephone) speeds up older transit and plane-table methods.

Each method has its limitations; note, for instance, that the Sharp-Palmer tests were confined to 1:2,400 scale, 5-ft. contour and hilly terrain.

Disadvantages found

In Colombia, experience with various methods has revealed "bugs" that at first were not obvious:

(1) Aerial photographs. In many tropic areas, satisfactory visibility for taking small-scale photographs exists only two or three days in a year; in those areas it is not economical to use aerial photos at all.

(2) Aerial photos with the plane table: Distortion of the photo, and difficulty of obtaining prints to the right scale, size and on suitable paper are practical drawbacks. However, aerial photos have been used with good success as guides for plane table work in the Cauca valley.

(3) Aerial photos with spirit leveling: For large area maps for irrigation studies, in flat country, we have applied this combination successfully. The process is as follows.

(a) The aerial photograph scale is determined in the field.

(b) A transit traverse net is run and adjusted. Points in the traverse are identified and marked in the photograph, and a print of the area covered by several photographs is prepared to the average scale of those photographs.

(c) A spirit level net is run along roads, railroads and fences close enough to interpolate the contours from one line to the next. In the very flat country of the Cauca valley lines were from 3 to 5 kilometers apart for 5-meter contours, and from 2 to 3 kilometers apart for 2-meter contours. Bench marks were established and located in the photos every 500 meters along the level lines, and their elevations were used to draw the contours on the prints.

This method was used within scale limits of 1:40,000 and 1:20,000, and proved to be rapid and economical. Its main drawbacks are: In open country with no trees and few fence lines, it is quite difficult for the levelman to locate points in the photos. This problem increases with the scale and with closer contouring (greater than 1:20,000; less than 2 meters). Near large meandering rivers where the topography is flat and micro relief important, it is difficult to draw the contours as they do not follow any established pattern.

Pros and cons of altimeters

(4) Aerial photos and altimeters: This method has the same drawbacks in flat country as the method just described. For large scale maps it may be used to fill in a contour map prepared by the aerial-photo-spirit-level method.

This method may be useful in heavy growths, where the instrument-man can locate himself on the photograph.

One drawback of the method is the fact that the usual field organization does not carry the necessary equipment and does not have the trained personnel to operate the equipment efficiently. One great advantage is that with the addition of one man per altimeter, the operation may be kept up indefinitely. Also, visibility and good weather are not as important as with other methods.

Precise altimeters usually are limited in range and therefore their use is restricted to lower levels. This is a serious handicap in Colombia.

Low-cost contouring possible

(5) Aerial photos and the Stereoplanigraph: In expert hands and with good ground control this instrument can "prepare" contour maps at low cost. It is being used extensively in Colombia for 1:10,000 scale and 10-meter contours. It is limited by the quality of aerial photos, and the contours cannot be drawn in flat and uniform country.

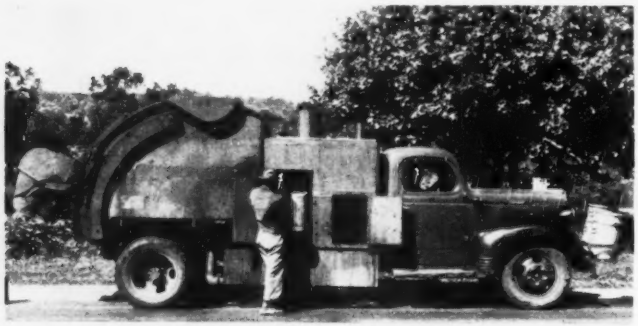
The final decision as to method is dependent on two important factors: the familiarity of the field personnel with one given method, and the availability of instruments.

Old methods best in some cases

For uniform country with few land marks, for large scale maps with closely spaced contours (when special air photos are not available), and for location topography along highways, railroads or canals, aerial photos are useful, but the best solution is usually given by the old plane table or the transit-stadia method, possibly assisted by the modern tool, the portable radio-telephone.

The work in the Cauca valley was initiated by Parsons, Brinckerhoff, Hogan and Macdonald, New York, and continued by the writer's firm. L. A. Lovell, L. A. Leyenberger and G. Tama developed the field methods.

OPEN TRUCKS that now haul a maximum load of 100 garbage cans will soon be replaced by a smaller fleet of . . .



ENCLOSED UNITS that carry far more refuse, as well as their own equipment for thawing and washing garbage cans as . . .

Canton Modernizes Garbage Collection

E. W. Galloway
Alvord, Burdick & Howson
Chicago, Illinois

WASHING AND STERILIZING garbage cans on collecting trucks is the latest of the garbage-disposal pioneering steps to be taken by the city of Canton, Ohio—and one that will save it an estimated $25,000 per year over previous methods.

An early proponent of supplying clean, city-owned cans to its customers, Canton now plans to wash these containers at the collection site and haul accumulated garbage in covered refuse trucks to disposal sites.

At present, raw or unwrapped garbage is collected and used for hog feeding. However, a new sewage-disposal project planned for Canton will incorporate garbage grinders and digesters to produce gas for power generation, and it was in this connection that studies of the present collection system were made and an improved procedure developed.

The city's practice has been to furnish each customer with a standard 10-gal. covered galvanized-iron can, collect this container at regular intervals and leave a clean one in exchange. The charge to residential customers is 75 cents per month.

The collecting fleet consists of twelve double-deck platform trucks, each capable of carrying 100 cans. With a two-man crew, a truck normally collects three loads a day, or an average of 150 cans per man. Garbage is disposed of at a hog farm, where the cans are washed under contract.

It was originally proposed that Canton install its own can-washing equipment in the new disposal plant. The present cans (of which the city owns more than 21,000) would be carried on trucks modified to hold four racks of 25 standard cans each. Firmly held to the rack, each group of 25 cans would be handled at the plant by an overhead trolley conveyor that would move it as a unit through unloading, thawing, dumping, cleaning and reloading operations.

Field studies to determine a satisfactory way for the collecting crew to remove empties and clamp used cans in truck racks disclosed that the average can collected was less than half full and contained only 15 lb. of garbage. Thus, the net load hauled by a 100-can truck averaged 1,500 lb. per trip, or less than one fifth of its capacity. To increase efficiency of the system, larger platforms holding 300 cans were considered. These would reduce daily trips per truck from three to one and cut travel distance from 45 mi. to 20, but were too bulky for normal city operation.

Enclosed trucks investigated

Standard enclosed refuse bodies were next investigated. Eight trucks with such bodies, making one trip per day, could handle the garbage hauled by the twelve existing platform trucks—and with even greater savings than the proposed 300-can trucks.

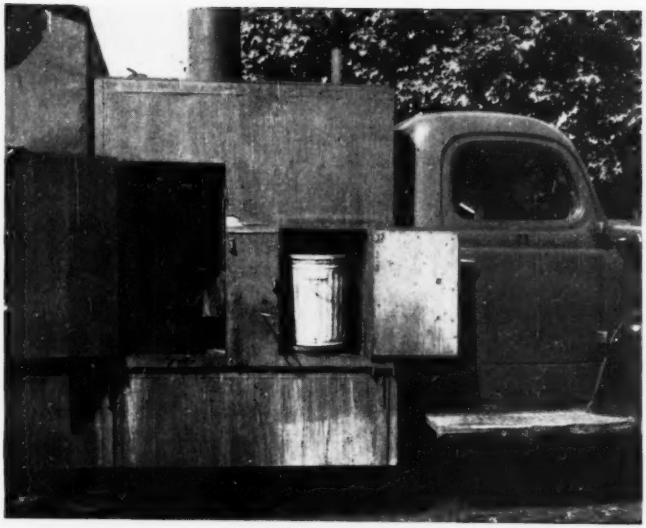
Cans would be emptied as collected, but it would be necessary to supply each truck with a washer capable of cleaning 450 to 500 cans per trip. Since suitable commercial units were unavailable, a new washer was devised for mounting between truck cab and body.

The washer is built around a standard portable high-pressure vapor-spray steam-cleaning unit that is commonly used in garages and manufacturing plants for cleaning engines and equipment. The machine delivers hot water and steam at 100 lb. pressure, and has a 90-gal. per hr. capacity. Normally, this volume would be insufficient for washing the required number of cans. So a special "Christmas tree"

EXPERIMENTAL COLLECTION—WASHING UNIT

Average Daily Performance

Body capacity	6¼ cu. yd.
Time out of barn	6 hr. 32 min.
Collect and wash	4 hr. 53 min.
Miles traveled	19½
Cans handled	301
Garbage collected	4,640 lb.
Garbage per can	15 lb.
Detergent used	6 lb.
Wash water used	162 gal.
Kerosene used	4½ gal.
Gasoline used	2 gal.



CAN WASHER, a converted high-pressure steam generator, is mounted ahead of the collection truck's self-loading refuse body. The left compartment contains a spray over which the emptied can is inverted for cleaning; the right one is a thawing cabinet.

spray was designed to utilize the full effect of the high temperature and pressure, with a resultant reduction in wash water requirements to little more than ½ gal. per can.

The spray consists of a number of nozzles arranged so the jets are 2 in. from the sides and bottom of the can, which is inverted over it. The can is revolved while the boiling water and steam sweep all solids from the surface to leave a sterilized container. A 6-sec. wash gives satisfactory results but cans are exposed for 10 sec. to insure thorough cleansing.

The washer also incorporates a thawing unit to loosen garbage frozen in the cans. The container is placed upright in a compartment where boiling water is sprayed on the can bottom, allowing steam and heat to travel around the sides. Field tests on solidly frozen garbage with the air temperature at 14 deg. have shown that in 6 sec. the average can is thawed sufficiently so that the garbage will easily slide from it. A few damaged cans require 10 sec. thawing.

To test the practicability of the operations as a whole, Canton sewage-department employees built an experimental garbage-collection unit with the cooperation of the steam-generator manufacturer. The truck carries a standard 6¼-cu. yd. enclosed refuse body and a cleaning unit with enough water and fuel for one load. In operation since May 1948, the test model has proved most successful. Its performance (Table I) indicates that a larger unit with a 9-cu. yd. body and a crew of three men will be able to collect and wash an average of 450 cans per day.

On this basis, Canton plans to provide eight of the new-type units to replace its twelve platform trucks, with the same 24 collectors handling all operations including washing. The collecting-washing trucks will be fitted with 9¼- and 13-cu. yd. refuse bodies, and will be purchased for about $8,000 and $9,500 each, respectively. One large model will make collections from restaurants and hotel.

The over-all cost of operation, maintenance and amortization will effect considerable saving over the present cost of collection and washing of cans. In addition, the new fleet will be of improved appearance, will provide more sanitary service by hauling garbage in enclosed bodies, and will enable the city to continue collections of raw garbage and furnish clean, sterilized cans to its customers.

The collection equipment and procedure was devised by the writers as part of Canton's new sewage-disposal and garbage-grinding system for which Alvord, Burdick & Howson, Chicago and Charles C. Hommon, Canton, were consultants.

(The late C. C. Hommon, Canton consulting engineer who died recently, was co-author with Mr. Galloway of this article—Editors.)

Big Cities Battle Slum-Scarred Areas

Several major cities are driving forward to clear slums and to build better neighborhoods, the American Municipal Association reports.

Los Angeles is undertaking a program to condemn and purchase blighted areas, clear the land and turn it over to private enterprise for development. In preparation for the program, city planning officials made a study of 70 square miles in the heart of the city, and reported findings on slum conditions, crime, juvenile delinquency, municipal costs and tax receipts.

The Michigan Supreme Court recently dismissed an injunction brought by Detroit property owners challenging municipal authority to clear one of the worst slum areas in the city. The city plans to condemn the section, clear the land gradually, replot it to provide for adequate parks and other recreational facilities, and resell to private builders.

A constitutional amendment authorizing establishment of urban redevelopment corporations in New Orleans was approved by Louisiana voters in the recent elections. The amendment permits the city to enter into a contract with urban redevelopment corporations under which New Orleans may condemn and assemble slum property to be purchased by the corporations.

Only legal obstacle to construction of additional low-rent housing by the St. Louis housing authority was removed recently when a circuit court upheld the tax-exempt status of the authority despite a 1945 change in the state constitution. The court held that the housing authority is a municipal corporation, a political subdivision within the meaning of the law, and that its operations are purely charitable. St. Louis voters, last November, rejected a bond proposal which would have provided $16 million for slum clearance.

Minneapolis' first blighted-area survey has attempted to establish a precise "livability" index. City health inspectors graded average, above average and substandard homes on plumbing facilities, crowding, presence of rats and other living conditions in determining the index.

Toledo's newly created slum-rehabilitation board will coordinate activities of the various municipal agencies in the city's blighted areas and will deal with problems which arise during a current inspection drive to bring substandard-housng areas in line with existing sanitation and safety regulations.

FIELD AND OFFICE

Slope-Taping Method

Total distances between inter-visible points may be measured with a precision of 1:10,000, exclusive of systematic errors, by the following slope-taping method:

A transit is set up at the initial point and the H.I. is measured. Slope distances are measured in succession to the forward point. Each time the head tapeman sticks a pin, he shows a signal at H.I. (a white rag tied on a staff is adequate) and the transitman reads the vertical angle from the initial point to the head pin. The last vertical angle read is that to the forward point.

The total distance between points is computed by an approximate oblique triangle formula that gives the successive straight-line distances between the transit point and the head pins, finally giving the straight-line distance between the main points. This final distance can be reduced simply to horizontal distance by use of the cosine relationship.

The oblique triangle approximate formula is:

$$M = (m_1 + m_2) - (m_1 + m_2)\frac{m_1}{m_2}\text{ vers }\theta$$

where M = the straight-line distance sought, to head end of tape (unknown side of triangle).

m_1 = the straight-line distance already computed or measured, transit to rear end of tape.

m_2 = the slope measurement, between each pair of pins.

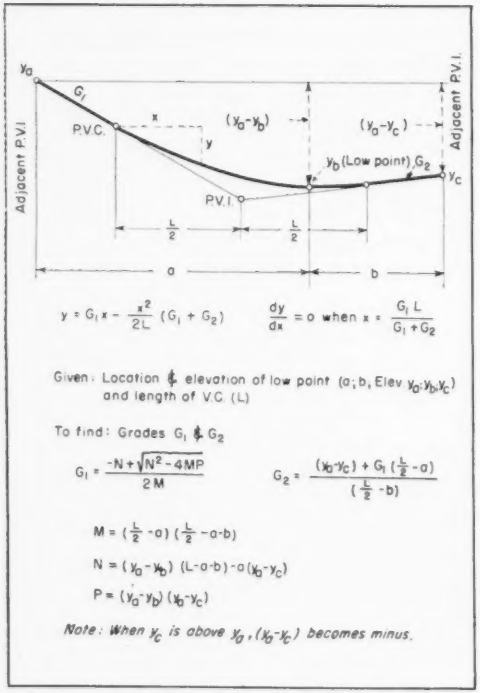
θ = the algebraic difference between vertical angles to rear and head ends of the tape, respectively.

For values of $\frac{m_1}{m_2}\theta$ less than 4½ deg. (and we have encountered few that are greater), this formula yields measurements that are checked by exact formulas to the nearest hundredth of a foot.

Computations are easy to tabulate, and the correction (second term of formula) is obtained by slide rule. For the versines correct to three significant figures throughout most of the probable computation range, a table, on one-minute intervals, must be taken off an 8-place cosine table, unless a 5-place log versine table is available.

Office work is simplified if all intermediate slope distances are even tape-lengths, for in this case one division operation (determining the known-side ratio) is eliminated and additions are simplified.—JUSTICE A. VILLA, public surveyor, Charlotte Amalie, St. Thomas, Virgin Islands.

Simple Parabolic Vertical Curves through a fixed high or low point



$y = G_1 x - \frac{x^2}{2L}(G_1 + G_2)$ $\quad \frac{dy}{dx} = 0$ when $x = \frac{G_1 L}{G_1 + G_2}$

Given: Location & elevation of low point $(a; b,$ Elev $y_a; y_b; y_c)$ and length of V.C. (L)

To find: Grades G_1 & G_2

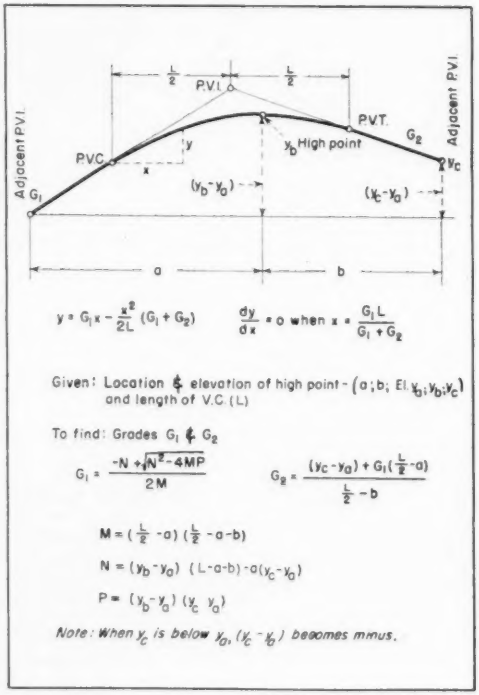
$$G_1 = \frac{-N + \sqrt{N^2 - 4MP}}{2M} \qquad G_2 = \frac{(y_a - y_c) + G_1(\frac{L}{2} - a)}{(\frac{L}{2} - b)}$$

$M = (\frac{L}{2} - a)(\frac{L}{2} - a - b)$

$N = (y_a - y_b)(L - a - b) - a(y_a - y_c)$

$P = (y_a - y_b)(y_a - y_c)$

Note: When y_c is above y_a, $(y_a - y_c)$ becomes minus.



$y = G_1 x - \frac{x^2}{2L}(G_1 + G_2)$ $\quad \frac{dy}{dx} = 0$ when $x = \frac{G_1 L}{G_1 + G_2}$

Given: Location & elevation of high point - $(a; b;$ El $y_a; y_b; y_c)$ and length of V.C. (L)

To find: Grades G_1 & G_2

$$G_1 = \frac{-N + \sqrt{N^2 - 4MP}}{2M} \qquad G_2 = \frac{(y_c - y_a) + G_1(\frac{L}{2} - a)}{\frac{L}{2} - b}$$

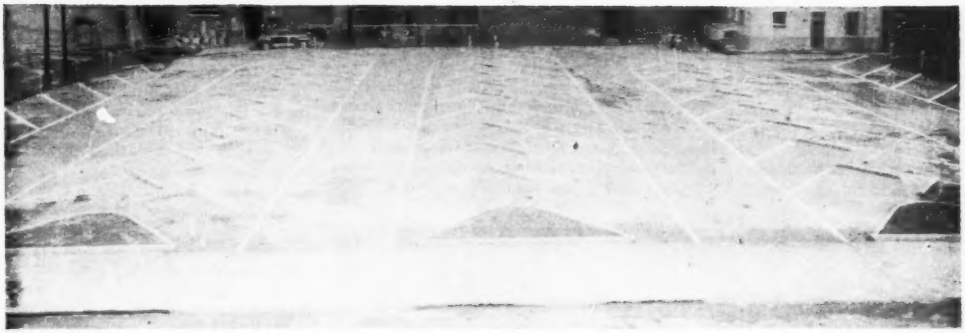
$M = (\frac{L}{2} - a)(\frac{L}{2} - a - b)$

$N = (y_b - y_a)(L - a - b) - a(y_c - y_a)$

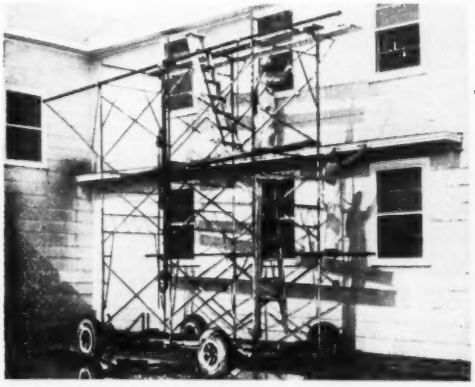
$P = (y_b - y_a)(y_c - y_a)$

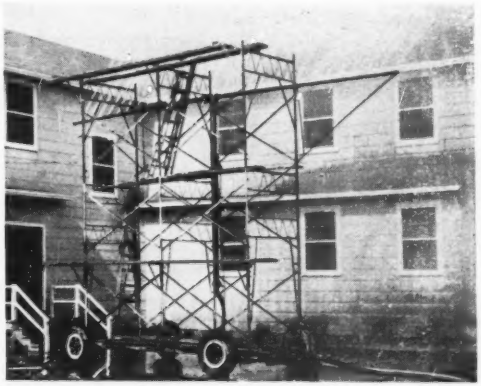
Note: When y_c is below y_a, $(y_c - y_a)$ becomes minus.

SIMPLE PARABOLIC VERTICAL CURVES to connect unequal grades and pass through a fixed high or low point may be computed readily by these formulas. The formulas eliminate the need for compound parabolic vertical curves in restricted locations, such as tunnels.—Peter Madia, *Triborough Bridge and Tunnel Authority, New York, N. Y.*

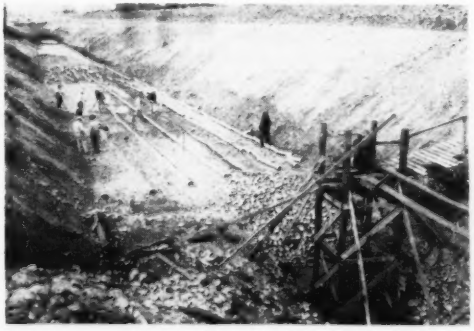


PARKING METERS in an Ithaca, N. Y. downtown parking lot drew a $416 income from 72 percent occupancy during the first month of operation. The 180x132-ft. lot with 65-car capacity is police patrolled. Charges are: One cent for 12 min.; and one and two nickles for one and two hours, respectively.—F. J. Laverty, Superintendent of Public Works, Ithaca, N. Y.





A MOBILE SCAFFOLD BUILT FOR $100 has saved the Naval Air Technical Training Center, Memphis, Tenn. about $30,000 in one year. The structure, built mainly of scrap material, has been equipped for painting (left) and firefighting (right).



UNDERDRAINS RELIEVE CANAL PRESSURE—Concrete-pipe underdrains in sections where groundwater level is high along Friant-Kern canal, Calif. relieve water pressure and prevent floating of concrete liner.

Pipe drains are laid in sand-gravel fill on subgrade and extend up the banks where side-slope drainage is required.

Permanent outlets opening downstream are inclosed in streamlined concrete hoods as the last step in canal-lining operation. The outlets have flap valves to prevent loss of irrigation water into the ground; valves open only when groundwater pressure exceeds the head of water in the canal.

READER COMMENT

Insulating Boards Not New

Sir: Insulating boards made of mineralized wood fiber and portland cement have been introduced to the United States from Europe, as stated in a new-product item in your issue of Dec. 16, p. 18. However, that was not recently but before the war. In Europe such boards were and are manufactured under different names. In this country, they are known and manufactured under the name Sonotaern, Thermax, and found a large application, especially for hangars of the Navy (Millsfield, Calif.). Recent developments pertain to building units for low-housing projects.

Thorough investigations of the physical properties (strength, sound and heat insulation) were made back in 1943 by R. E. Davis and the writer in the Engineering Materials Laboratory, University of California, Berkeley, Calif.

Fig. 1 shows the Millsfield hangar during construction, and Fig. 2 shows the experimental building demonstrating the suitability and economy of the material for low-cost housing where the insulating boards were used for both walls and roof.

J. J. Polivka,
Consulting Engineer,
Berkeley, Calif.

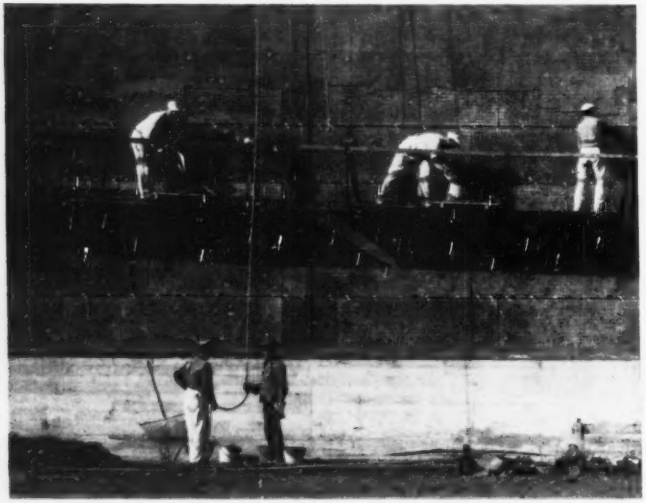


FIG. 1. STUCCO BEING APPLIED to mineralized wood-fiber boards used for the exterior walls of the Navy hangar at Millsfield, Calif.

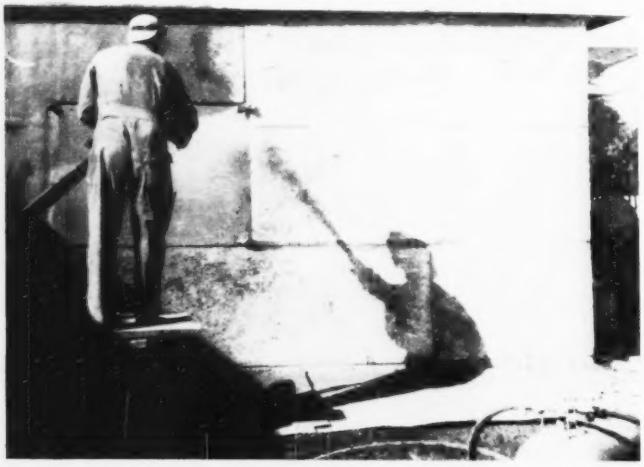


FIG. 2. APPLYING CEMENT SPRAY to wood-fiber boards used for the walls of houses. In this housing project, some cement-finished boards also were used.

Pay for Highway Engineers

Sir: Your Oct. 14, 1948, issue, p. 86, had a commendable article on what two state highway departments are offering to attract young engineers for highway careers.

But, the question is, will they follow this career after being trained and graduated when finding that after a few years the attraction has been dulled by the salaries that are being paid in this field.

Strange that no one will come out and place his finger on the one solution to the lack of highway engineers, mainly the inadequate salaries paid.

Here in the state of Ohio is a good example where many well trained highway engineers have left the field, which pays such meager salaries from the highway director down to the division engineers and county engineers' personnel, thus creating a critical situation in the design and maintenance of highways and bridges in the state.

J. H. Getz,
Highway Engineer,
Lorain County, Ohio.

Quantity Surveys

Sir: With reference to R. D. Sannit's article "Do Our Estimates Cost Too Much?" (ENR Dec. 9, p. 107), I should like to mention that in this country the preparation of a bill of quantities by a qualified quantity surveyor is an old established practice and generally adopted for any job of importance.

K. Hajnal-Konyi,
Consulting Engineer,
London, England

BOOK REVIEWS

Legal Questions and Contracts

BUSINESS, LEGAL AND ETHICAL PHASES OF ENGINEERING—By D. T. Canfield and J. H. Bowman. 358 pp. McGraw-Hill Publishing Co., New York 18 and London. $4.50.

ENGINEERING CONTRACTS AND SPECIFICATIONS—Second Edition—By Robert W. Abbett. 327 pp. John Wiley & Sons, New York 16; Chapman & Hall, London. $3.75.

Two well-known books have been combined in Business, Legal and Ethical Phases of Engineering. They are Business Administration for Engineers and Ethical Phases of Engineering, both written by the late C. Francis Harding and D. T. Canfield. Those earlier texts approached the legal and business aspects of engineering largely from the viewpoint of the electrical engineer, that being the field of interest of the authors. In the present revision an effort has been made to broaden the scope to cover the other principal engineering fields. In general, the book gives a concise presentation of the fundamentals of the many factors that affect the business activities of engineers.

Robert W. Abbett's book is centered on construction contracts and specifications. Consequently, those subjects are covered in much more detail than is possible in the book of broader scope by Canfield and Bowman. Also, the author is a civil engineer whose experience has been largely in the construction field. This edition puts more emphasis on private contract work than the first one.

Soil Mechanics Papers

PROCEEDINGS, SECOND INTERNATIONAL CONFERENCE ON SOIL MECHANICS AND FOUNDATION ENGINEERING — Six volumes, 330 pp. each. Obtainable from the Secretary, Second International Conference on Soil Mechanics and Foundations, Oostplantsoen 23, Delft, Netherlands, for 75 guilders (approximately $28.30).

Papers on soil mechanics and foundations presented at the conference held in the Hague last June have been published in five of the six volumes of the proceedings of the conference that are now available. The sixth volume contains the lectures and discussions.

A seventh volume containing 41 papers from all parts of the world and 23 papers prepared by a group of French engineers and published originally in the June, 1948 issue of TRAVEAUX, all of which were received too late to be printed with the six volumes, will be published if enough orders are received. The charge for this volume will be 15 guilders (about $5.65). Orders should be in the form of bank drafts payable to the treasurer of the conference, care of Amsterdamsche Bank, Delft.

Because of currency and other restrictions, German engineers did not participate in the conference. They have, however, collected into one volume of 215 pages papers on soil mechanics and foundation engineering developments in Germany since 1939. Also included is a bibliography of German publications on the same subjects in the period 1939-48. This book is entitled "Abhandlungen ueber Bodenmechanik und Grundbau, 1939-48".

Arrangements are being made to sell this volume through the library of the Graduate School of Engineering, Harvard University. Funds realized from the sale are to be used to purchase copies of the PROCEEDINGS and copies of American publications on soil mechanics for German libraries. The price has been set at $6.50. Checks should be payable to Arthur Casagrande and sent to the library, Cambridge 38, Mass.

Principles of Prestressing

PRESTRESSED CONCRETE—By Gustave Magnel. 215 pp. Concrete Publications, Ltd., 14 Dartmouth St., Westminster, S.W. 1, London. 15s. Obtainable through Stechert, Hafner, Inc., 31 E. 10th St., New York 3, for $4.

Prof. Magnel, of the University of Ghent, Belgium, one of the world's foremost authorities on prestressed concrete, presents in English in this book a concise account of present knowledge of that subject. He also provides data to enable some types of structures to be designed in prestressed concrete and to permit contractors to carry out the work properly.

Prestressing is based on this fact: If a concrete beam is compressed longitudinally to the extent that, under load, the principal stresses will not be tensile, the concrete will not crack, even though no steel is embedded in it. For the same loads and span, a properly designed prestressed beam requires less material than one of reinforced concrete.

The compression can be brought about in several ways. Prof. Magnel deals mainly with the Belgian method, which he devised, in which steel cables impose the prestress. Cables consisting of many small-diameter steel wires are placed in a sheet-metal sheath or in holes in the concrete. The ends of the wires are attached to cast-steel plates which in turn are placed against a cast-steel distributing plate at the ends of the beam. After the concrete has hardened, the stretching force is applied to two wires at a time by a 5-ton jack. Steel stresses usually are 120,000 psi., although the wires have an ultimate strength of about twice that. To prevent corrosion, the ⅛-in. spaces between wires in each cable are later filled with grout.

Besides discussions of principles and methods of prestressing, the book includes chapters on design of simple and continuous prestressed beams, creep of steel and concrete, effect of time and load on prestress, tests of beams, permissible stresses, and applications.

Mathematics for Engineers

THE MATHEMATICAL SOLUTION OF ENGINEERING PROBLEMS—By Mario G. Salvadori, with a collection of problems by Kenneth S. Miller. 245 pp. McGraw-Hill Book Co., New York 18 and London. $3.50.

Engineering is largely applied mathematics. To the engineer, mathematics is a tool, a language, and a mode of thought. Proficiency in advanced engineering applications and capacity for creative analytical solution of new problems are both limited by the mathematical equipment of the engineer and his facility in applying mathematics as a mastered tool.

For that reason, a book such as this one, which is clear and interesting as well as compact should be most welcome to both students and practicing engineers as a means for strengthening the reader's knowledge of engineering mathematics and improving his facility in applying it.

For students, both graduate and undergraduate, the book should be invaluable—strengthening, widening and unifying their mathematical knowledge and training them in the resourceful and confident application of the mathematical technique to engineering problems. A unique feature is the use of practical physical problems or engineering applications to introduce each topic so as to awaken the student's interest and supply motivation. Airplane flights, rocket launchings, deep sea mines, cable sags, and motion picture theaters are used as introductory illustrations.

The first chapter covers a review of basic mathematical concepts, including numbers (rational, irrational, real and imaginary), operations on complex numbers, variables and functions,

limits, continuity, infinitesimals, derivatives, differentials, and integrals. The second chapter, also in the nature of an illuminating review, covers the essentials of plane analytical geometry, including the topics of coordinates, slopes and distances, straight lines, conic sections, parametric equations, transformation of coordinates, and geometrical applications of the calculus (slopes, curvature, and maxima and minima).

Chapters III and IV, on the numerical solution of algebraic equations, transcendental equations, and simultaneous equations, should be particularly valuable to the engineer, presenting and making available practical methods that are not as well known as they should be. Higher degree equations, solutions by successive approximations, the method of chords, the method of tangents, determinants, Laplacian expansion, pivotal condensation, Gauss's scheme, error equations, iterative methods, and the method of converging increments are demonstrated and applied.

Chapter V, on elementary functions and power series, develops and illuminates the engineering applications of algebraic functions, trigonometric and inverse trigonometric functions, the logarithmic function, exponential functions, hyperbolic functions, expansions, Maclaurin's and Taylor's series, tests for convergence of series, and functions of a complex variable.

Chapter VI, in concise and stimulating fashion, covers the subject of Fourier series expansion (including both the trigonometric and complex forms) and harmonic analysis (including the practical short-cut procedures of the Runge schemes and the Fischer-Hinnen method). This treatment is exceptionally compact but thorough.

The book contains a collection of more than 1,000 practice problems for the direct application and review of the topics presented. The applied problems are taken from the various fields of engineering and the basic engineering sciences, and their solution is an educational review of both engineering science and mathematics, strengthening knowledge of both.

It would be difficult to find anywhere, in a single volume, all of the useful mathematical knowledge and techniques assembled, unified and so interestingly presented in this compact little book. This reviewer enthusiastically recommends it as a text book for engineering students, a refresher course for graduates, and a review and reference work for practicing engineers.

Reviewed by D. B. STEINMAN, *Consulting Engineer, New York*

Miscellaneous Notes on Booklets and Reprints

THE COMPLETE STORY of the French railroads, their war destruction, their reconstruction and their place in the future is given in a 382-page special issue of the French magazine TRAVAUX, published by Science et Industrie, 6 Ave. Pierre 1er de Serbie, Paris 16, France. Arranged in three parts, relating respectively to track and structures, equipment and rolling stock, and services and business practices, the book is made up of 37 separate articles written by the railroad officials themselves. Price, 585 francs.

THE UNIFORM SYSTEMS of accounts for electric, gas and water utilities and the lists of retirement units of these utility organizations prepared by the National Association of Railroad and Utility Commissioners are again available for the State Law Reporting Co., 30 Vesey St., New York 7, N. Y. These publications have been out of print for some time. The uniform systems of accounts sell for $3.50 each for electric, gas or water utilities and the lists of retirement units are $1.50 each.

REQUIREMENTS to be met by engineers from this country who wish to practice in Latin American countries are outlined in a progress report to the National Council of State Boards of Engineering Examiners prepared by D. B. Steinman. It covers Argentina, Bolivia, Brazil, Chile, Colombia, Cuba, Ecuador, Honduras, Mexico, Nicaragua, Panama, Paraguay, the Philippines, Uruguay and Venezuela. This report is included in the PROCEEDINGS of the 27th annual meeting of the council, copies of which can be obtained from T. Keith Legaré, Post Office Drawer 1404, Columbia, S. C. The same publication includes a report on the practices of state boards of engineering examiners in this country with respect to the registration of engineers already registered in other states.

LATEST REVISIONS OF TWO BUILDING CODES—National Building Code, 1949, recommended by the National Board of Fire Underwriters, and Building Exits Code, 1948, published by the National Fire Protection Association—are now available. Changes in the former include a requirement that all existing buildings conform to certain minimums for safety to life, raising of the allowable unit stresses in timber and steel, and inclusion of an extensive table of fire-resistance ratings of walls and column, beam and truss protections. This code may be obtained free of charge from the NEFU at 85 John St., New York 7, N. Y.; 222 W. Adams St., Chicago 6, Ill., and 1014 Merchants Exchange, San Francisco 4, Calif. The exits code, in its ninth edition, contains a new chapter on apartment houses and major revisions of the chapter on moving stairways and hotels. It may be obtained for $1 by writing to NFPA, 60 Batterymarch St., Boston, Mass.

A COMPLETE LISTING of groundwater investigations made by the U. S. Geological Survey has just been published. During the war, no public announcement was made of many of these reports. Some are only in typewritten form but can be inspected at the Geological Survey office, 2209 Federal Works Building, Washington, D. C. Mimeographed copies of other reports and of the list of reports can be obtained from the same office.

New Engineering Books

SOURCES OF ENGINEERING INFORMATION—By Blanche H. Dalton. 109 pp. University of California Press, Berkeley 4, Calif.; Cambridge University Press, London, England. $4.

PRESTRESSED CONCRETE — By Gustave Magnel. 215 pp. Concrete Publications Ltd., 14 Dartmouth St., Westminster, S.W. 1, London. Price 15s.

DESIGN FOR WELDING—Published by the James F. Lincoln Arc Welding Foundation, Cleveland 1, Ohio. 1,024 pp. $2 in U.S.A. $2.50 Elsewhere.

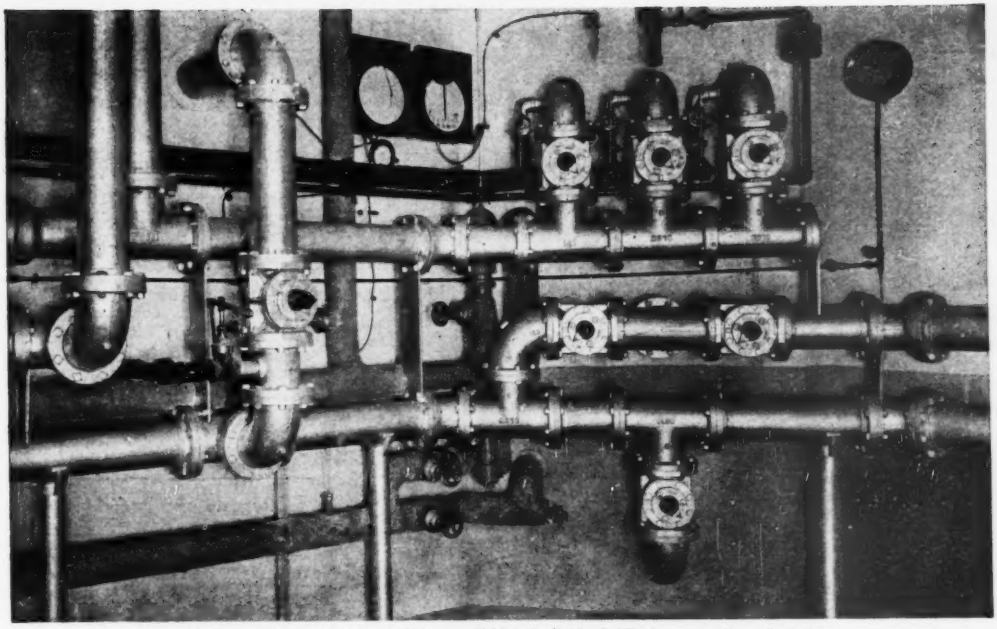
MATHEMATICS AT WORK—By Holbrook L. Horton. The Industrial Press, 148 Lafayette St., New York 13; Machinery Publishing Co., Ltd., National House, West St., Brighton 1, England. $6.

PIONEER RAILROAD—The Story of the Chicago and North Western System—By Robert J. Casey and W. A. S. Douglas. 334 pp. McGraw-Hill Book Co., New York 18, and London. $4.

PLANNING THE MODERN CITY—Volume I and II—By Harold MacLean Lewis. 284 pp. and 224 pp. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16. $6, each volume.

FIELD ENGINEERING—A Handbook of the Theory and Practice of Railway Surveying, Location, and Construction. (Searles and Ives) 22nd Edition.—By Philip Kissam. Volume I, Text, 414 pp., Volume II, Tables, 422 pp. John Wiley & Sons, Inc., New York; Chapman & Hall, Ltd., London. Vol. I, $3.75; Vol. II, $3.75; Combined volumes, $6.50.

(*Continued on page 82*)



Nordstrom lubricated valves on sludge manifold in Rock Island, Illinois sewage disposal plant.

The most efficient valve for *SEWAGE DISPOSAL* has lubricated, tapered plug.

- NORDSTROM FLUSH PASSAGE-WAY PREVENTS SEDIMENT LODGING.
- THE TAPERED PLUG IS CONSTANTLY SEATED ON LUBRICANT.
- THE PORTS ARE SEALED BY "SEALDPORT" LUBRICATION SYSTEM.
- GLAND TYPE, FRICTION-FREE CUSHION PACKING INSURES LONGEST LIFE.
- THE LUBRICATED SEAT IS NEVER EXPOSED TO LINE CONTENTS.
- ROTARY PLUG MOVEMENT MAKES POSITIVE CLOSURE.

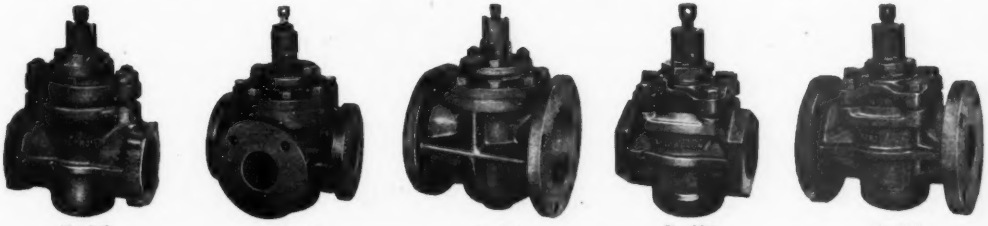


Fig. 142 Fig. 3465 Fig. 143 Fig. 114 Fig. 115

KEEP UPKEEP DOWN—Use only genuine Nordcoseal lubricants

Nordstrom

LUBRICATED VALVES

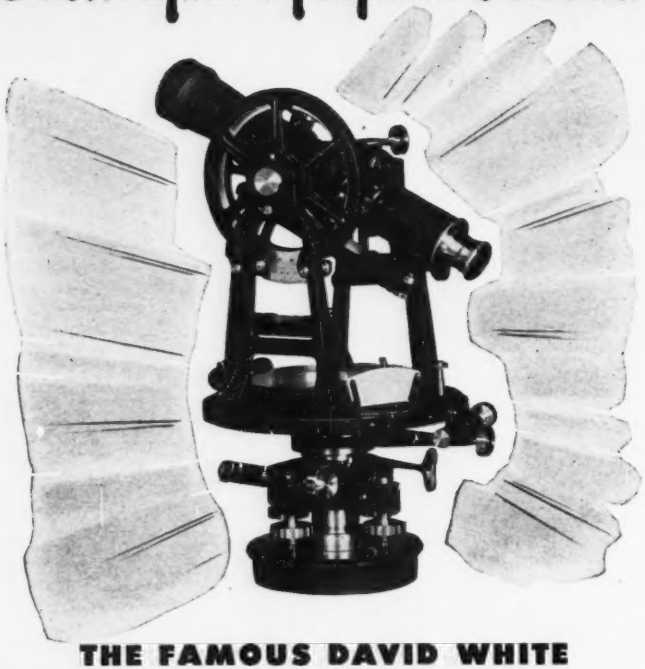
NORDSTROM VALVE DIVISION *Rockwell Manufacturing Company*

Main Offices: 400 North Lexington Avenue, Pittsburgh 8, Pa., Atlanta, Boston, Chicago Houston, Kansas City, Los Angeles, New York, Pittsburgh, San Francisco, Seattle, Tulsa

. . . and Leading Supply Houses

Export: Rockwell International Corporation, 7701 Empire State Bldg., New York 1, N. Y.

Back Again by Popular Demand



THE FAMOUS DAVID WHITE

Western Reconnaissance Transit

HERE IT IS — back in production at your numerous requests — and with many improvements. The Western Reconnaissance Transit, while moderate in price, is a high quality instrument particularly designed to serve many engineering and surveying purposes. While capable of distant focusing, it can also be used for close work, giving versatility.

No desirable features have been overlooked in the construction of the "Western." It is a standard instrument of precision, of the same exacting construction as our Engineers' Transits, yet offering a saving well worth while.

SPECIFICATIONS — No. 7064 TRANSIT

TELESCOPE: 9¼" achromatic terrestrial. *Coated optics. Objective lens* with effective aperture 1.141" — *Internal focusing*, erecting eyepiece with improved spiral movement for stadia wires. Magnifying power 20 diameters. Stadia wires fixed ratio 1:100 reading direct from center of instrument, the constant (f+c) being negligible. Ground spirit level to telescope, graduated 5" long; sensitiveness 60 seconds. Improved Clamp and Tangent Screw with counter spring.

VERTICAL CIRCLE: 4" diameter graduated to ½ degrees on solid silver, with double direct vernier reading to one minute, with removable aluminum guard to circle.

COMPASS: Gold plated needle about 3½", Compass ring beveled graduated on solid silver to half degrees and numbered in quadrants. Compass box watertight, with variation ring.

HORIZONTAL LIMB: 5-5/16" diameter. Graduated on solid silver to ½ degrees, numbered 0°-360° in two ways, with double-direct vernier reading to one minute, with ivory hinged reflector — too fine spirit levels, sensitiveness about 75 seconds.

CENTERS: Bronze anti-friction alloys, extra long and accurately fitted. Shifting center. Improved clamp and tangent, clamp and leveling screws of nickel silver.

FINISH: Black morocco enamel and lacquer.

EQUIPMENT COMPLETE: With strong aluminum base plate, sun shade, plumb bob, magnifying glass, adjusting pins, screw driver, oil can and brush, packed in fine polished hardwood case. Full length split leg tripod, 3½" 8 thread standard.

WEIGHT: Instrument 10 lbs., tripod 11½ lbs. *Note: Extension leg tripod No. 9070 extra. Instrument can also be furnished less compass, or vertical circle if desired.*

Write for name of your nearest dealer or contact us direct.

DAVID WHITE COMPANY

315 W. Court St.
Milwaukee 3, Wis.

New Engineering Books

(*Continued from page 80*)

1948 PUBLIC WORKS ENGINEERS' YEARBOOK-DIRECTORY. 216 pp. American Public Works Association, 1313 East 60th St., Chicago 37, Ill.

JOURNAL OF THE INDIAN ROADS CONGRESS—No. 5—Twelfth Session, September 1948. 482 pp. Published by Indian Roads Congress, New Delhi, Delhi, India. Price, (Foreign) Five Shillings.

DER GRUNDBAU—Band I. By L. Brennecke and Erich Lohmeyer. 253 pp. Wilhelm Ernst & Sohn, Berlin, Germany. Price 18 DM.

GRUNDLAGEN DER WASSERBAUKUNST—Fifth Edition—By. G. Tolkmitt. Wilhelm Ernst & Sohn, Berlin, Germany. Price 16 DM.

Reports and Pamphlets

PROCEEDINGS OF THE OHIO HIGHWAY ENGINEERING CONFERENCE—Bulletin No. 134. Ohio State University Engineering Experiment Station, Columbus, Ohio. $1.

THE FACTS ABOUT PANTHER MOUNTAIN RESERVOIR. Black River Regulating District, Watertown, N. Y.

FACTS AND FIGURES ON GOVERNMENT FINANCE—1948-49. Tax Foundation, Inc., 30 Rockefeller Plaza, New York 20.

AN OCEAN WAVE MEASURING INSTRUMENT—Technical Memorandum No. 6. Beach Erosion Board, Office of the Chief of Engineers, Washington, D. C.

TENTATIVE RECOMENDATIONS FOR WINTER CONCRETING METHODS—Summary in English of a report by The Danish Institution of Civil Engineers. The Danish Natonal Institute of Building Research, Copenhagen K, Denmark.

BIBLIOGRAPHY ON FROST ACTION IN SOILS—Bibliography No. 3. Highway Research Board, Washington 25, D. C.

CEMENT AND CONCRETE REFERENCE BOOK. Portland Cement Association, 33 West Grand Avenue, Chicago 10, Ill.

RECOMMENDED PRACTICE FOR SNOW REMOVAL AND TREATMENT OF ICY PAVEMENTS—Second Revision, No. 9-2R—Division of Engineering and Industrial Research, Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.

ROUND-UP OF WHAT'S NEW IN TRAFFIC SAFETY—By Norman Damon. Automotie Safety Foundation, 700 Hill Building, Washington, D. C.

REPORT OF COMMITTEE ON ADVANCEMENT OF HIGHWAY ENGINEERING UPGRADING ENGINEERING PERSONNEL—Technical Bulletin No. 150. American Road Builders' Association, 1319 F St., N.W., Washington, D. C.

CONCRETE PIPE

Gives you Strength, Durability and Economy in . . .

SANITARY SEWERS

For more than 100 years sanitary engineers have selected and specified concrete pipe for sanitary sewers because it meets all three essential requirements: (1) strength to resist severe impact and to sustain heavy overburdens, (2) durability to render many long long years of heavy-duty service and (3) true *low-annual-cost* economy.

STORM SEWERS

Concrete pipe renders outstanding service in storm sewers because it carries off water efficiently. Its smooth, interior finish provides maximum hydraulic capacity and resists the wearing action of abrasive matter. Concrete storm sewer pipe is economical because it's moderate in first cost, has a long life and little or no maintenance cost. That's *low-annual-cost* service.

WATER LINES

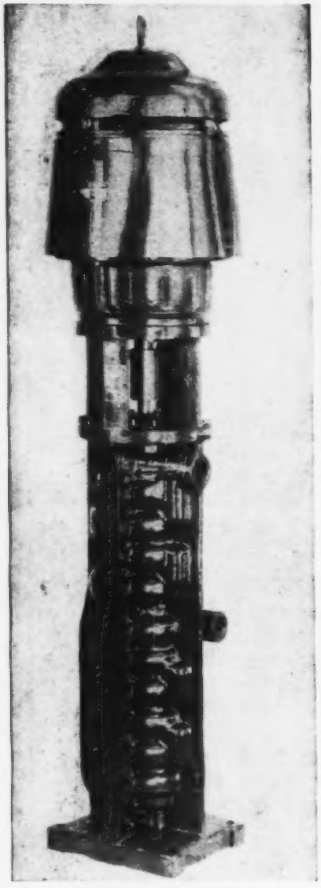
Concrete pipe is ideal for water lines because (1) it can be designed to resist high internal pressures, (2) its joints can be made watertight, (3) there is no tuberculation and far less incrustation to impair hydraulic capacity and (4) it minimizes taste, odor and dirty water difficulties. Its reasonable first cost, combined with low upkeep and long life, give *low-annual-cost* service.

PORTLAND CEMENT ASSOCIATION

33 WEST GRAND AVENUE • CHICAGO 10, ILLINOIS

A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field-work

NEW PRODUCTS



Vertical Centrifugal Pump

Hydroplex vertical pump is designed for high pressure, low volume pumping. Capacities range from 10 to 140 g.p.m. and heads range from 450 to 1,700 ft. Standard drive is a direct-connected three-phase, 220-440-volt vertical electric motor. Operating speed is 3,550 or 2,950 r.p.m. Balance of axial thrust forces is achieved by opposed grouping of impellers.—Byron Jackson Co., Terminal Annex Box 2017, Los Angeles 54, Calif.

Splicing Vise for Wire Rope

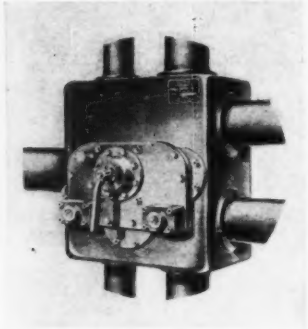
Adjustable vise holds firmly in place while being spliced, wire rope from $\frac{1}{8}$ to $\frac{1}{4}$-in. diameter. Operates in stationary position or with a free swivel motion at discretion of operator.—Fellows & Stewart, Terminal Island, Wilmington, Calif.

New Type Vibrator Shaft

This new shaft has the reinforcing spring of the flexible shaft completely locked in by being solidly imbedded in a heavy layer of oil-resistant molded rubber. This provides a strongly reinforced shaft perfectly smooth on the outside and makes for long shaft life. Another feature is a non-metallic inner liner impregnated with graphite. So that there is practically no loss of power through friction.—Wyzenbeek & Staff, Inc., 838 W. Hubbard, Chicago 22, Ill.

Improved T-Square

The good points of the new "Instrumaster" T-square are given as long life, continued accuracy, complete view of work area, and reduced possibility of smudging. It is one piece and shatterproof, transparent, both sides usable, and extended ribs permit smooth movement across working surface.—Instrumaster Industries, 2456-170 W. Jackson Blvd., Chicago 12.

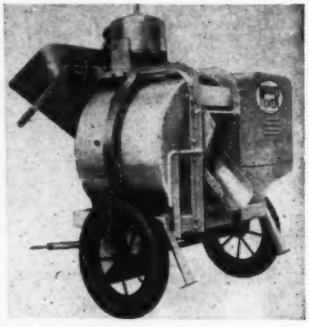


Single Control Valve

A single control valve for the simplified operation of all types of zeolite softeners, ion exchange systems and pressure filters promises to reduce time required by the plant operator, and minimize the possibility of faulty operation through error in manipulation. This is the Cochrane Hydromatic Single Control Valve, recently announced by the Cochrane Corporation of Philadelphia as standard equipment on its line of zeolite softeners and pressure filters. Control of backwash, rinse, service, chemical feed, etc., is greatly simplified. All necessary operations are accommodated by means of a single-valve. In addition to integrating the functions normally performed by a valve nest the hydromatic valve also incorporates such features as built-in backwash and rinse rate controllers, which further reduce space requirements and attention required by operating personnel.—Cochrane Corp., 17th St. & Allegheny Ave., Philadelphia 32, Pa.

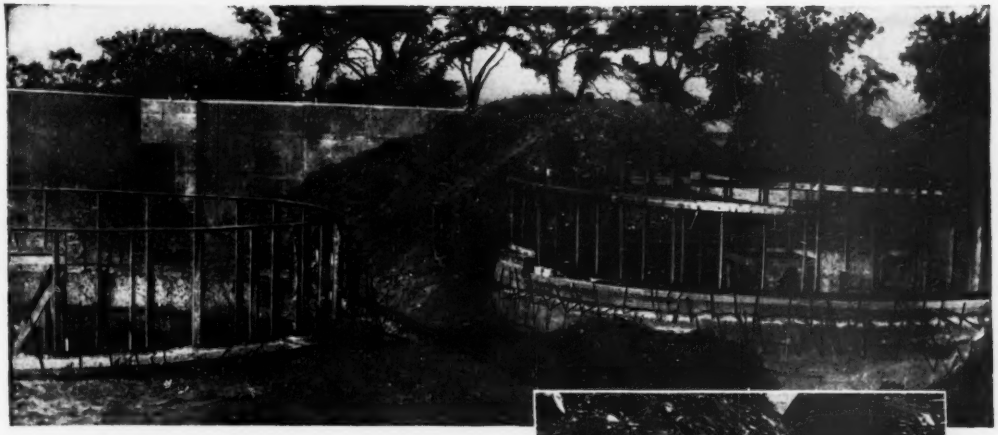
3-ton Hydrocrane

Production of a new 3-ton capacity Hydrocrane for small jobs is announced. Full hydraulic operation of the crane (powered by truck engine, governor-controlled to run at the middle of the normal speed range) eliminates shafts, drums, gears, clutches, brakes, chains, and sprockets. All functions, including the closing action of the $\frac{3}{4}$-yd. clamshell bucket and the 370 degree swing, are hydraulically controlled. Without clutches or brakes, it operates equally well in unusually high or low temperatures.—Hydrocrane Division, Bucyrus-Erie Co., 793 West Greenfield Ave., Milwaukee 14, Wis.



Concrete Mixer

New 3½-S non-tilting concrete mixer has drum and drumheads of heavy steel plate which revolve on wide solid rubber rollers with guides to hold true running location and prevent weaving of drum. Automatic water tank for predetermined quantities of water for each batch. Drum is gear-driven, and heavy roller chain transmits power from engine to countershaft. Complete unit weighs 1,000 lb.—Muller Machine Co., Inc., Metuchen, N. J.



Utilizing Sewage Gas means Corrosion so this plant used

Byers Wrought Iron

In the new Sewage Treatment plant at Fall River, Massachusetts, plans called for using sewage gas to heat two of the new buildings. Hayden, Harding & Buchanan, the engineers, recognized that the economies from this by-product utilization would be cancelled out by excessive maintenance in the gas handling lines—unless proper steps were taken to combat the severe corrosive conditions. They used a time-tried method, by specifying "wrought iron". Byers black wrought iron pipe, in sizes from 1 inch to 4 inch, was installed. The general contractor on the project was Wyner-Gil Company, and plumbing and heating was handled by J. F. McGlame Company.

Conveying sewage gas is always a real problem, because of its extremely corrosive character. Such gas contains a substantial proportion of carbon dioxide, as well as hydrogen sulfide, and is moist. This sets the stage for acid formation, and aggressive corrosive action. Wrought iron is highly resistive to this type of corrosion, and it has been used by leading engineers in a large number of the nation's most modern plants.

Wrought iron's unique character is responsible for its excellent service qualities. Tiny fibers of glass-like silicate slag, threaded through the body of high-purity iron, halt and "detour" corrosive attack. The fibers also help anchor the initial protective scale, which shields the underlying metal.

Our bulletin, "Wrought Iron for sewage treatment and disposal installations", gives a concise but comprehensive story of how wrought iron is reducing maintenance in dozens of services. Ask for a complimentary copy.

A. M. Byers Co., Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, Salt Lake City, Seattle, San Francisco. Export Division: New York, N. Y.

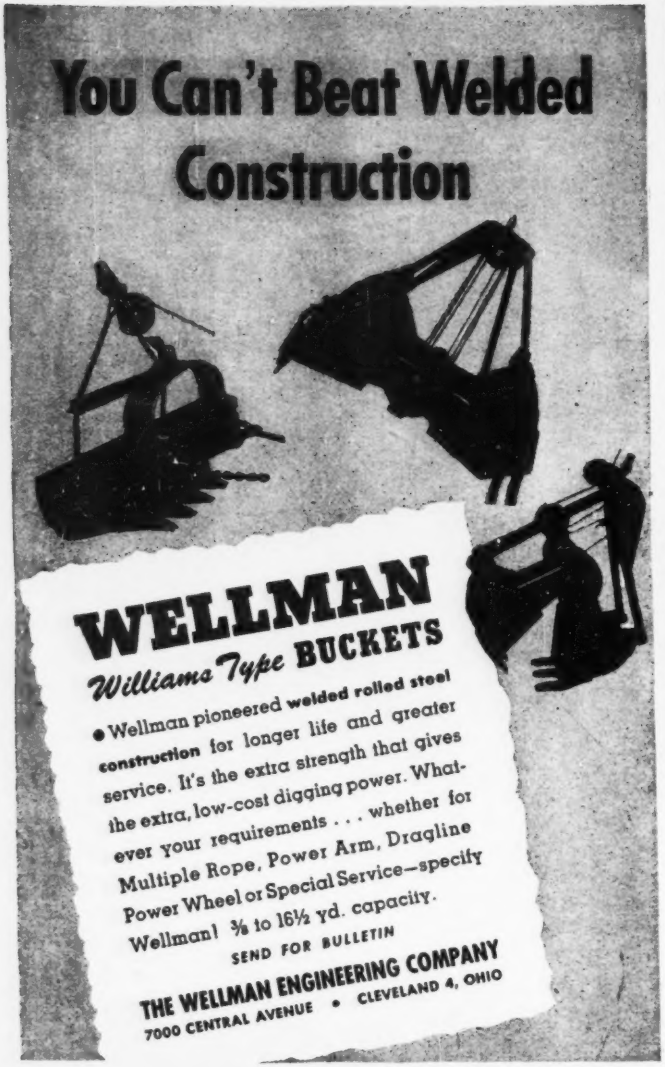
CORROSION COSTS YOU MORE THAN WROUGHT IRON

BYERS

GENUINE WROUGHT IRON

TUBULAR AND HOT ROLLED PRODUCTS

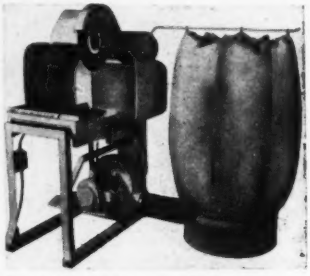
ELECTRIC FURNACE QUALITY ALLOY AND STAINLESS STEEL PRODUCTS


You Can't Beat Welded Construction
WELLMAN
Williams Type BUCKETS
• Wellman pioneered welded rolled steel construction for longer life and greater service. It's the extra strength that gives the extra, low-cost digging power. Whatever your requirements . . . whether for Multiple Rope, Power Arm, Dragline Power Wheel or Special Service—specify Wellman! ⅜ to 16½ yd. capacity.
SEND FOR BULLETIN
THE WELLMAN ENGINEERING COMPANY
7000 CENTRAL AVENUE • CLEVELAND 4, OHIO

Stang WELLPOINT SYSTEM
For KNOW-HOW ENGINEERING SUPERVISION EQUIPMENT to keep jobs DRY
The Stang System has proved its efficiency and economy on both large and small jobs all over the United States. Stang engineering and supervision in planning, installation and operation insures a DRY JOB at all times.
JOHN W STANG CORPORATION
2 Broadway New York 4, N. Y.
8221 Atlantic Ave. P.O. Box 631, Bell, Cal.

Easy-Level Floor Drains

A new line of floor drains has been especially designed to make floor level adjustment possible quickly and simply. These drains are suitable for either new or old construction, but are particularly desirable for floor installations where resurfacing is required. The process is simply loosen the locating bolts on the frame—raise or lower the frame and grate to the desired level—tighten bolts again. All the adjustment is on the inside of the drain—there are no pockets or close fitting parts to become fouled with concrete. Pipe connections are not disturbed.—J. A. Zurn Mfg. Co., Erie, Pa.



Dust-free Masonry Saw

A new "Fireproofer" dust-free, dry-cut masonry saw has been designed to obtain the speed, efficiency and accuracy of dry-cutting all types of masonry products without delays for dust removal. The dust is eliminated by a powerful vacuum which collects the dust-laden air and filters it through a specially designed filtering bag. Both the dust collecting vacuum and the saw blade are powered by individual, 1½ hp. electric motors.—The Martin Fireproofing Corp., P. O. Box 27, Buffalo 17, N. Y.

Electrical Conduit

A neoprene-covered, flexible-shielding metallic electrical conduit for a wide variety of industrial operations, features a special process designed to give natural bond of rubber to metal. The conduit eliminates completely any danger of wiring damage by action of oil or grease. Conduit and couplings alike are liquid-proof, air-tight and chemical resistant.—Techniflex Corp., 55 Jersey Ave., Port Jervis, N. Y.

Manufacturers' Publications

Truck Equipment—A large catalog lists a great variety of equipment items for trucks and trailers, including winches, dump bodies, pumps, power take offs, brakes and parts, load chains, grab hooks, wire line, etc.—LELAND EQUIPMENT CO., 12 N. W. 13th St., Oklahoma City, Okla.

Brazing Fittings—Bulletin gives instructions for a process of low-temperature silver alloy brazing for joining pipe and tubing, which makes assemblies that are strong, permanently leak-tight and maintenance-free. Any user of an oxyacetylene torch can become proficient in the use of "Easy-Flo" or "Sil-Fos."—HANDY & HARMON, 82 Fulton St., New York 7, N. Y.

Water Purification – A series of bulletins explains the line of Sterelators for the safe and efficient controlling, metering and feeding of chlorine for sterilizing water of solutions. There are two kinds—The solution feed type in which the dry chlorine gas is first absorbed in water and then distributed through solution lines to the point or points of application; the direct feed type by which the dry chlorine gas is delivered in the required amounts direct to the point or points of application.—EVERSON MANUFACTURING CO., 214-16 W. Huron St., Chicago, Ill.

Aluminum Shapes—Detailed drawings of the line of Reynolds standard architectural shapes of extruded aluminum are now available in a portfolio. Looseleaf drawings are on standard 8½x11-in. sheets for easy filing. Cross sections are all printed solid black in actual size, full scale. An index in the front makes it easy for the draftsman to choose the particular shape wanted. That sheet can be placed under the drawing and a tracing can be made directly from it.—REYNOLDS METALS CO., 2500 So. THIRD STREET, LOUISVILLE, KY.

Road Sweeping Magnets—A bulletin tells of a high intensity road sweeping magnet for removing nails, spikes, sharp pieces of steel and other "tramp" iron hazards from roads, airfield landing strips and aprons, parking lots, factory aisles, etc. The magnet is to be mounted on a truck with power supply from a portable engine-generator set.—DINGS MAGNETIC SEPARATOR CO., 4740 W. MCGEOGH AVE., MILWAUKEE 14, WIS.

Three Reasons Why Construction Men Like the Name GOODALL on Their BOOTS and CLOTHING

1. ***Quality*** **is plainly evident in every detail . . . the materials; the way they're made; their fine appearance.**

2. ***Comfort*** **makes them "easy to wear," no matter how long they're worn, or how active the wearer must be.**

3. ***Long Wear*** **assures real economy . . . a lot of *extra* time between replacements, regardless of rough use.**

"TOE-SAVER" BOOTS

Famous for their durability and comfort, and the positive protection afforded by the steel toe-cap. Gridtread soles assure long wear and prevent slipping on wet surfaces. Made in short, three-quarter and full-hip lengths.

The Goodall Line includes other types and styles of boots, bootees, work shoes and overshoes . . . all made of *quality* materials, to *quality* specifications.

COATS, JACKETS, OVERALLS, HATS

A variety of styles, rubber and oiled, for economical wet-work and wet-weather protection, above ground or below. Linemen's coats—no metal parts. Soft, "squam" and safety hats. Cape caps. Work gloves for all purposes.

Contact Our Nearest Branch for Details and Prices.

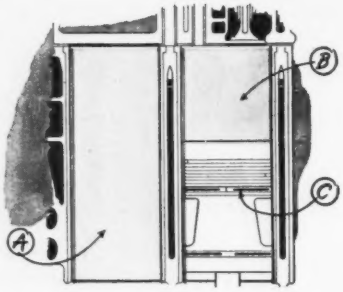
GOODALL RUBBER COMPANY

GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J.

Branches: Philadelphia • New York • Boston • Pittsburgh • Chicago • St. Paul • Los Angeles

Est. 1870 San Francisco • Seattle • Salt Lake City • Houston • Distributors in Other Principal Cities

Case D119E--Reducing Wear on Liners in Diesels



DIESEL ENGINE LINERS AND PISTON

In high-speed Diesel engines lubricated with RPM DELO Diesel Engine Lubricating Oil, wear on liners was held to a minimum with little variation over their entire areas. A constant lubricating film was maintained on them even in high-temperature belts. RPM DELO Oils are recommended for all types of Diesels. Come in all viscosity grades necessary for your engines.

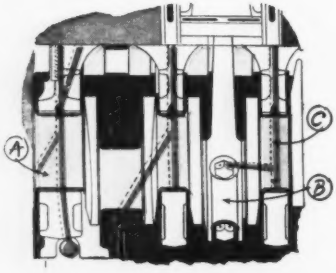
A. Special additive provides metal-adhesion qualities...keeps oil on all parts whether hot or cold, running or idle.

B. An anti-oxident resists formation of lacquer—resistance to extreme heat provides lubrication in the toughest conditions.

C. Contains detergent which keeps rings clean and operating freely...prevents scratching and gouging of liners.

RPM DELO Diesel Oil will not corrode any bearing.

Case D119F--Prolonging The Lives of Diesel Bearings



SECTION OF DIESEL ENGINE CRANK AND CAM

No bearing failures occurred between overhaul periods in Diesel engines used in the toughest service when they were lubricated with RPM DELO Diesel Engine Lubricating Oil.

A. Non-corrosive to all types of bearing metal...inherent ability of base stocks and added compound resist oxidation and formation of acid which is common cause of bearing corrosion.

B. Maintains a tough lubricating film which withstands excessive shocks and pressures.

C. Special detergent compound keeps oil passages clean and open - allows free flow of lubricant to vital points.

Another compound in RPM DELO Oil prevents foaming of the oil. An accurate measurement of crankcase levels can always be obtained.

For additional information and the name of your nearest Distributor, write

STANDARD OIL COMPANY OF CALIFORNIA

225 Bush Street, San Francisco 20, California

The California Oil Company
Barber, New Jersey

The California Company
17th and Stout Streets, Denver 1, Colo.

Standard Oil Company of Texas
El Paso, Texas

DIESEL ENGINE RPM DELO LUBRICATING OIL

Trademarks Reg. U. S. Pat. Office

Contour Sawing Machine—An 8-page catalog describes Zephyr sawing machines, with photos and specifications on an easy-to-read chart. The machines range from a 425-lb. model with a 16-in. throat to a powerful precision model of 5,640 lb. with a 60-in. throat. Listed are 62 representative materials that may be contour cut with these machines.—THE DOALL CO., DES PLAINES, ILL.

Tunneling—A 4-page folder stresses construction tunneling as an economical means of avoiding inconvenience to traffic and loss of business to merchants and others. It features lightweight corrugated liner plates. Uses illustrated are for new sewers, relining of failing sewers and culverts, service tunnels for utility lines, and underpasses.—ARMCO DRAINAGE & METAL PRODUCTS, INC., MIDDLETOWN, OHIO.

Gas Unit Heater—Bulletins describe a versatile and economical gas-method of heating for stores, factories, shops and warehouses. Each unit is a complete heat generating and distributing plant, equipped with automatic controls, packaged in a space-saving housing 35x21x23 inches, for application near the ceiling to save valuable floor space. Heat generated is transferred directly to the heat exchangers and by them to the circulating air.—U. S. AIR CONDITIONING CORP., COMO AVE., SOUTHEAST AT 33D, MINNEAPOLIS 13, MINN.

Centrifugal Blowers—Bulletin No. 440 describes centrifugal blowers for all types of heating, ventilating and air conditioning in public buildings, and for industrial and commercial uses. There are sizes and types for every requirement. Construction is explained. —U. S. AIR CONDITIONING CORP., MINNEAPOLIS 14, MINN.

Cooling System Cleaner—A 4-page circular tells of a high pressure steam cleaner for the cooling systems of cars, trucks and tractors. It is claimed that the "Hypressure Jenny with Steam Thoro-Purge" combines the four essentials for complete cleaning of cooling systems—heat, chemical action, strong blast, and clear water rinse—and it works very quickly.—HOMESTEAD VALVE MFG. CO., CORAOPOLIS, PA.

Lettering Instrument—(4-p. folder) Describes Varigraph for producing precision machine lettering from templates designed by leading artists and typographers. Templates are available in 16 popular alphabets. Designed to shorten tedious hours at drawing board. —VARIGRAPH CO., 2715 VINE ST., LINCOLN 3, NEBRASKA.

"VIC" TELLS HOW

YOU GET 4-WAY SAVINGS WITH VICTAULIC COUPLINGS AND FULL-FLOW FITTINGS!...

1. TIME—faster, easier assembly of any piping system... because you can button up 2-bolt Victaulic Couplings in just a few turns of a standard T-wrench. Easier, faster repairs and salvage, too.

2. LABOR—no specially trained or skilled labor is needed when you lay pipe lines the fast and easy "Victaulic way."

3. MATERIAL—when repairs are needed, you can simply unbutton Victaulic Couplings and "lift out" any fitting or pipe length without backing off adjoining sections, without damage to pipe ends or fittings.

4. OPERATION—the wide, sweeping turns and true circular inner walls of Victaulic Full-Flow Fittings increase pipe-line delivery and lower pumping costs.

FOR A 5th SAVING—use our "VIC GROOVER." It grooves pipe ends twice as fast with half the effort of ordinary pipe threaders.

COMPLETE DETAILS are yours for the asking. Write today for Victaulic Catalog and Engineering Manual No. 44... and for "Vic-Groover" Catalog No. VG-47.

Sizes—¾" through 60"

FOR FULL ECONOMY...MAKE YOUR PIPING SYSTEM ALL VICTAULIC!

SELF-ALIGNING PIPE COUPLINGS
VICTAULIC
EFFICIENT FULL-FLOW FITTINGS

VICTAULIC COMPANY OF AMERICA
30 ROCKEFELLER PLAZA, N. Y. 20, N. Y.
Victaulic Inc., 727 W. 7th St., Los Angeles 14, Cal.
Victaulic Co. of Can. Ltd. 200 Bay St., Toronto 1

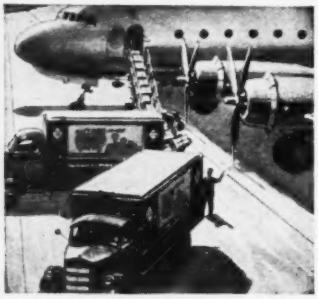
For Export outside U.S. and Canada: PIPECO Couplings and Fittings · Pipe Couplings, Inc., 30 Rockefeller Plaza, New York 20, N. Y.

Copyright 1949, by Victaulic Co. of America

$5.07 saved a contract ...and a man's business

Special switches were needed to complete an electrical instrument contract. Late delivery of finished items would kill chances of future orders and lay off men. Switches were 1100 miles away, but Air Express delivered the 15-lb. package at 3 A.M. — 8 hours after pick-up. Cost, only $5.07. Air Express now used regularly. Keeps down inventory, improves customer service by early delivery.

Low as $5.07 was, remember Air Express rate *included* door-to-door service, receipt for shipment and more protection. It's the world's fastest shipping service that *every* business uses with profit.



World's finest Scheduled Airline fleet carries Air Express. 24-hour service — speeds up to 5 miles a minute. Direct to over 1000 airport cities; air-rail for 22,000 off-airline offices.

FACTS on low Air Express rates:

17-lb. carton of hearing aids goes 900 miles for $4.70.
12 lbs. of table delicacies goes 600 miles for $2.53.
(Same day delivery in both cases if you *ship early.*)

Only Air Express gives you all these advantages: Special pick-up and delivery *at no extra cost. You get a receipt for every shipment* and delivery is proved by signature of consignee. One-carrier responsibility. Assured protection, too—valuation coverage up to $50 without extra charge. Practically no limitation on size or weight. For fast shipping action, phone Air Express Division, Railway Express Agency. And specify "Air Express delivery" on orders.

SPECIFY AIR EXPRESS
GETS THERE FIRST

Rates include special pick-up and delivery door to door in principal towns and cities

AIR EXPRESS, A SERVICE OF RAILWAY EXPRESS AGENCY AND THE
SCHEDULED AIRLINES OF THE U.S.

Elections and Activities

A greatly accelerated program of highway construction in all the New England states for the next three years was forecast by Frederick A. Higgins of Lawrence, president of the New England Road Builders' Association at the annual dinner held recently in Boston. More than 1,000 highway officials, contractors, road building equipment and materials men attended the dinner. Officers of the association are: Mr. Higgins, president; Daniel J. O'Connel of Holyoke, vice-president; Joseph Maney of Boston, treasurer; Frederick Hoitt of Swampscott, secretary.

The Carolinas Branch, of Associated General Contractors of America, has elected W. T. Potter of Greenville, S. C., president for the coming year, succeeding R. H. Pinnix of Gastonia, N. C. Other officers are: N. K. Dickinson, Jr., of Monroe, N. C., vice-president; C. P. Street of Charlotte, N. C., re-elected treasurer and Robert Patten of Charlotte, re-elected executive secretary. Directors are: Eugene Skinner of Charleston, S. C., Hal S. Crain of Durham, N. C., C. P. Street of Charlotte, Laurence C. Merchant of Asheville, N. C., and E. D. Sloan of Greenville, S. C., and William F. Bowe of Augusta, Ga.

The Illinois Section of the American Society of Civil Engineers has unanimously elected Charles H. Mottier, vice-president and chief engineer of the Illinois Central System, as president of the section for 1949. Other officers elected are: Walter S. Lacher, secretary of the American Railway Engineering Association, first vice-president Otto K. Jelinek, planning engineer with the Chicago Park District, second vice-president; and E. Montford Fucik, an associate in Harza Engineering Co., treasurer. Howard F. Peckworth, managing director of the American Pipe Association continues as secretary.

Alexander Fraser, president of Shell Union Oil Corp., has been reelected chairman of the Automotive Safety Foundation. Three new vice-chairmen for the tire, petroleum and cement industries also were named for 1949. They are: L. R. Jackson, president, Firestone Tire and Rubber Co., L. S. Wescoat, president, The Pure Oil Co., and C. D. Franks, vice-president, Portland Cement Association.

Men and Jobs

Ray H. Bower, Tipton, Ind., construction engineer and contractor, has been named chief engineer of the Indiana State Highway Department, succeeding Carl Vogelgesong. Mr. Bower is a graduate of Purdue University, and was chief engineer for a time several years ago. Governor-elect H. F. Schricker has also re-appointed members of the State Highway Commission who served in his previous administration, as follows: **Samuel C. Hadden,** chairman, **Jasper Jones, Albert J. Wedeking,** and **Thomas B. McDonald.**

George W. Howie, assistant traffic engineer in Portland, Ore., has accepted an appointment as Cincinnati, Ohio, traffic engineer.

Simeon W. Hodgin, former Richmond, Ind., city engineer, has been appointed commisisoner of the Richmond Sanitary District, created to provide funds for financing an $800,000 sewage disposal plant addition. Another member of the new board of commisisoners is **W. E. Ross,** city engineer. These two will select a third member. The board will have charge of the operation of the sanitary district and the city's sanitary department.

K. Mark Cowen has been named superintendent of parks and recreation at Elkhart, Ind., having previously been recreation director of the Indianapolis park system. **Arthur Lindberg** recently resigned as Indianapolis park department engineer to take a position with Butler University, that city.

F. W. Arnold has been appointed assistant Oklahoma State highway maintenance engineer, succeeding Earl Anderson, recently promoted to division engineer at Ada.

S. B. Barnes, Los Angeles, Calif., has been appointed consulting engineer in structural design for the multimillion dollar Statler hotel, office building and shopping center in the Wilshire Blvd. downtown area.

Henry K. Evans and **Gustave E. J. Jamart,** staff engineers of De Leuw, Cather & Co., Chicago, will be western representatives in the company's new office at 79 McAllister St., San Francisco, Calif. The firm has just completed a year's survey and report on a transportation plan for San Francisco.

CEMENT GUN COMPANY
"GUNITE" CONTRACTORS
GENERAL OFFICES—ALLENTOWN, PENNA., U.S.A.

PRE-STRESSED "GUNITE" WATER TANK

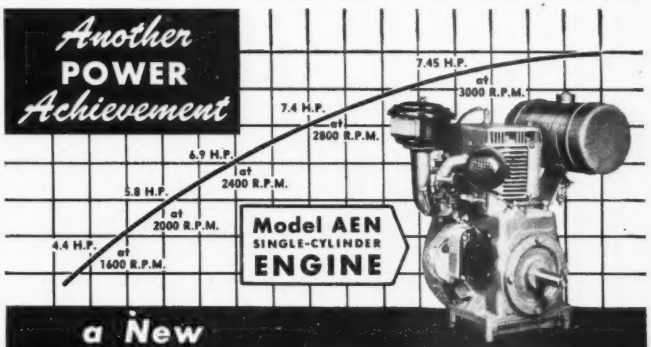
We built the above pre-stressed "GUNITE" tank in 1944. It is 90' in diameter with a water depth of 25'. The wall and dome roof of this tank are all "GUNITE." This is just one of scores of similar tanks designed and built by us.

We will be glad to discuss your tank needs with you and submit designs and estimates for your consideration.

Our method of pre-stressing the hoop rods in the wall and in the dome ring assures a bottle-tight and crack free reservoir.

Our 64-page bulletin A2400 describes this method of construction and also scores of other profitable uses of "GUNITE." A copy will be sent free upon request.

Another POWER Achievement



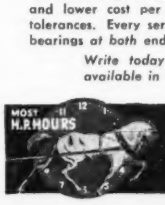
a New WISCONSIN HEAVY-DUTY Air-Cooled ENGINE

Lower cost, more horsepower at normal speeds . . . less weight! Already, manufacturers and users alike are praising these features of the new heavy-duty air-cooled Model AEN 7½ hp. single-cylinder engine.

As shown, it develops peak horsepower well within normal speeds, yet weighs only 126 pounds . . . less than any comparable engine.

Advanced engineering design alone is responsible for the added power, decreased weight and lower cost per delivered horsepower. Every part is machined to traditional close tolerances. Every service-proved, heavy-duty feature still remains . . . Timken tapered roller-bearings *at both* ends of the crankshaft; jet and spray oiling, etc.

Write today for additional data. Other Wisconsin Air-Cooled Engines available in Single Cylinder, 2-Cylinder and 4-Cylinder Models, 2 to 30 hp.



WISCONSIN MOTOR CORPORATION
World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 14, WISCONSIN

Brute Force
PUTS 'EM DOWN

SUPER-VULCAN
OPEN TYPE
DIFFERENTIAL-ACTING
PILE HAMMERS
18C, 30C, 50C and 80C

You can depend on powerful Super-Vulcan every time for fast, efficient pile driving. Line it up on any type of pile under the toughest conditions and you'll see why Super-Vulcan costs less to operate, drives more piles per dollar. It's rugged, durable, simple in design, easy to operate . . . built to meet the requirements of experienced contractors.

The open type fits the same leads, uses the same accessories, as Warrington-Vulcan Single-Acting Pile Hammers.

For double driving power on less steam choose Super-Vulcan. Write for details.

Sizes—
18C-30C-50C-80C
Meet all needs

VULCAN IRON WORKS
Since 1852
331 North Bell Avenue
Chicago 12 ---Illinois

OBITUARY

W. A. Norris, 55, president and owner of the Wortham Machinery Co., Cheyenne, Wyo., for the past 15 years, died Dec. 23 in that city. A civil engineering graduate of the University of Nebraska, in 1915, Mr. Norris served 10 years as chief materials engineer of the Wyoming State Highway Department. He left the department in 1929 to enter highway contracting and, five years later, liquidated his contracting business to devote full time to the sale and distribution of construction equipment by the Wortham Machinery Co.

James R. Wood, 60, Calgary, Alta., city engineer, died at Carstairs, Dec. 30. A graduate in engineering of the University of Glasgow, Scotland, he was with the Imperial Oil Co., later on the engineering staff of Vancouver, B. C., whence he went to Calgary as assistant engineer and in 1940 succeeded the chief, A. S. Chapman. Under Mr. Wood major extensions to the Calgary sewerage system were made.

Charles C. Tinkler, 80, retired contractor, died in San Francisco, Calif., Jan. 11. Long associated with such western tunnel work as that on San Francisco's Hetch Hetchy Aqueduct, his firm, Hitchcock & Tinkler, built the Moffatt Tunnel across the continental divide on the D. & R.G.W. R.R. between Denver and Salt Lake City.

Gustave A. Peple, Jr., 51, a consulting engineer, died Jan. 3, at Richmond, Va. He was a graduate of Virginia Polytechnic Institute.

Russell S. Lieurance, 55, reclamation bureau engineer in charge of the Boysen, Wyo., unit of the Missouri river basin project, died Jan. 10, in Denver, Colo. He first entered the employ of the reclamation bureau in May, 1920, following his discharge from the Army. Except for a few years as consulting engineer for the republic of Mexico and private firms, he was employed by the bureau until May, 1942. During the war he served as a colonel, participating in engagements in Africa, Sicily, Italy, France and Germany. He commanded the 531st engineer shore regiment in the Salerno landings in Italy. At the time of his release on Jan. 2, 1946, he was commanding officer of the 1163rd Engineer Combat Group. A month after his release he was named engineer of the Boysen unit.

Alfred R. Ebberts, 52, associate physical testing engineer for the California Division of Highways, died in Sacramento, Jan. 2. He received his license in civil engineering by examination after independent study. He became an engineer for Allegheny County, Pa., in 1925, and later was technical director for Colprovia Roads, Inc., New York City, until 1934.

Maj. George Perrine dies, N. Y. subway pioneer

Maj. George Perrine, 78, civil engineer, who was a pioneer in the construction of subways and tunnels in the New York metropolitan area, died Jan. 18.

Major Perrine devoted his life to engineering and the Army with which he served in the Spanish-American and the first world war. He was a civil engineer graduate of the Columbia School of Mines in 1894. He was assistant to the chief of the Rapid Transit Railroad Commission in the construction of the first New York subway, and later he was with Rodgers & Hagerty, Inc., in the construction of the second subway.

From 1905 to 1906, he was contractor's engineer in the construction of the Pennsylvania Railroad's tunnel from Manhattan to New Jersey. The next year found him in California working on hydro-electric development for the Pacific Coast states.

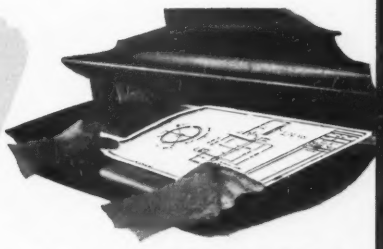
In 1914 and until the first world war, Major Perrine was again at work on the expanding Manhattan subway system. After the conflict he worked once more with Rodgers & Hagerty on the construction of Holland Tunnel approaches. He also aided in engineering details that went into the planning and construction of the Queens-Midtown Tunnel.

Canadian educator, engineer, soldier dies

Alexander James Macphail, 78, eminent Canadian engineer, died in Kingston, Ont., Jan. 13. He took his civil engineering degree at McGill University and postgraduate work at Heidelberg. In the first world war he commanded the First Division, Royal Canadian Engineers.

For 20 years Dr. Macphail was head of the department of civil engineering at Queens University, Kingston. He received many military and educational honors. For many years he was on the editorial board of the "Queens Quarterly". Rudyard Kipling once said of him, "He built bridges with one hand and wrote poetry with the other."

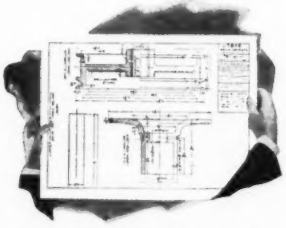
Made to help you get more out of direct process and blueprint reproduction



Gives more contrasty, more durable printing intermediates. Made with an extremely high-contrast silver emulsion and a tough, durable base, Kodagraph Autopositive Paper produces unexcelled printing intermediates—dense black images on purest white. Prints direct to positive . . . no negative step.

Assures more detail, more legibility in final shop prints. Made to save valuable originals from the wear-and-tear of quantity printing, Kodagraph Autopositive Paper—used for intermediates—makes possible blueprints and direct process prints of highest quality—sharp and crisp in every detail.

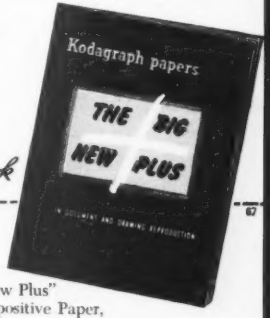
Kodagraph Autopositive Paper



Prints from more types of originals—direct to positive. Made to give superb prints from old, faded, worn, or opaque originals . . . blueprints or direct process prints . . . as well as good quality tracings, Kodagraph Autopositive Paper saves redrafting time and expense.

EASTMAN KODAK COMPANY
Industrial Photographic Division
Rochester 4, N. Y.

See for yourself . . . Your local blueprint service will be glad to produce Kodagraph Autopositive intermediates and, if you wish, direct process prints or blueprints from them. Or your own reproduction department can make prints on Kodagraph Autopositive Paper—in ordinary room light, on direct process or blueprint equipment, with simple photographic processing.



Mail coupon for FREE book

Eastman Kodak Company
Industrial Photographic Division
Rochester 4, N. Y.

Please send me a copy of "The Big New Plus" —your booklet about Kodagraph Autopositive Paper, and the other papers in this new Kodak line. I have
☐ direct process ☐ blueprint ☐ contact printer equipment.

Name _____ (please print)
Department _____
Company _____
Street _____
City _____
State _____

Kodak

CONSTRUCTION REPORTS Proposed Work

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.
ELSIE EAVES, Manager J. A. MAHONEY, Reports E. R. BIGGERSTAFF, M. R. ROESSLER, Statistics

WATER SUPPLY

●**Ill., Decatur**—City, City Hall, WW. sys. imprvs., incl. recarbonation basin, surface wash equip., electric low head pumps, electric high head pumps, standby Diesel pump. unit, electric standby generating unit, spillway repairs, two 2½ m. g. elevated storage tanks, watermains, etc. **$2,000,000.** Warren & Van Pragg, Inc., 253 S. Park St., engr.

Mich., Charlotte—City, R. A. Nowlin, supt. P. Wks., City Hall, WW imprvs. **$225,000.** Ayres, Lewis, Norris & May, 508 Wolverine Bldg., Ann Arbor, engrs.

N. C., Morganton—City, bond election Feb. 8, WW imprvs., water filter plant west of city on Catawba River. **$400,000.** J. N. Pease & Co., 119½ E. 5 St., Charlotte, consult. engrs. CD 7/10/46—ENR 7/25/46.

Okla., Hennessey—City, voted bonds, WW extens. **$120,000.** V. G. Thompson, 1100 W. Main St., Oklahoma City, consult. engr. CD 12/27.

●**Tenn., Nashville** — City, City Hall, voted bonds, WW imprvs., 3 m.g. concrete reservoir, **$260,000;** 36 in. low duty discharge main from the pump station to purification plant, **$80,000;** 42 in. filtered waterline from filter plant to high duty pumps, **$195,000;** distr. sys. reinforcement main from 8 Ave. S. W. to 44 Ave. **$763,000;** filtration plant imprvs. **$1,-300,000;** installing 30 m.g. centrifugal pump, **$250,000;** installing 12 in. reinforcement main in Lewis Hart and Humphrey Sts. **$105,000;** 12 in. line in 28 Ave. connecting with new line on Charlotte Ave., **$61,000;** line connection between Charlotte Ave. and Harding Rd. **$215,-000;** 10 in. connection between Hume St. and 10 Ave., **$37,000;** 10 in. line north of Caruthers St. between 9 and 12 Ave. south, **$36,000;** electrification city pump station, **$300,000;** installing 36 in. main from Green St. and Wharf Ave. to 8 Ave. **$400,000.** (**Correction**—Chester Engineers, 210 E. Park Way, Pittsburgh, Pa. to make detailed plans and supervise construction). CD 12/1—ENR 12/23.

Tex., Childress—City, voted bonds waterlines, underground storage, **$360,000;** dam on Baylor Creek, **$300,000.** D. T. M. Davis, Box 636, consult. engr.

Tex., Dallas—City, Earl Goforth, secy., 36 in. c.l. watermain from Hines Blvd. to downtown area. **$550,000.** Myers & Noyes Tower Petroleum Bldg., consult. engrs.

Tex., Lockney—City, voted bonds, WW sys. imprvs. **$114,000.** R. L. Maggard, city engr.

Tex., Malakoff—City, voted bonds, water supply sys. **$125,000.** R. E. Wiseheart, 1416 N. Dixie Dr., Tyler, consult. engr.

Tex., Sulphur Springs—City, water storage tower, c.l. lines, **$85,000;** water storage lake, earth and concrete, **$175,000.** Wyatt C. Hedrick, 904 Fort Worth Ave., Dallas, consult. engr.

Tex., Vidor—Orange County Water Control & Imprvt. Dist. 1, c/o W. Wilson, voted bonds **WW. $273,000.** Koch & Fowler, Gr. Natl. Life Bldg., Dallas, consult. engrs.

SEWERS, WASTE DISPOSAL

Calif., Concord—City, City Hall, **$525,000** bond election Feb. 1, sewage disposal plant. John S. Bates, 3134 Eton Ave., Berkeley, consult. engr. (**Correction**—amount of bonds.) CD 1/4—ENR 1/11.

Calif., Los Angeles—Bd. Supervs. Los Angeles Co., 501 Hall of Records, sanitary sewers in Grayburn Rd., $82,200 and in Halstead St., **$121,600,** both in East Pasadena. C. E. Arnold, co. engr.

Mich., Charlotte—City, R. A. Nowlin, supt. P. Wks., City Hall, secondary sewerage sys., treatment plant, **$250,000.** Ayres, Lewis, Norris & May, Wolverine Bldg., Ann Arbor, engrs.

N. M., Carlsbad—City, E. A. Roberts, clk., plans by Ashley G. Classen & Assoc., consult. engr. and archt., 504 N. Kansas St., El Paso, Tex., sewerage sys. extens. **$450,000.** CD 3/12—ENR 4/1.

N. Y., North Greenbush—Town, sewerage sys. and treatment plant in Wynantskill area. **$300,000.**

Okla., Bartlesville — City, storm sewers. **$200,000.** Hudgins, Thompson & Ball 110 W. Main St., Oklahoma City, consult. engrs.

R. I., Middleton—Town, Harry E. Peckham, Town Hall, sanitary sewers, Middleton and Atlantic Beach. **$150,000.** Gardner Easton, 20 Bradford Ave., Newport, consult. engr.

●**Tex., Athens**—City, sewage disposal plant, other imprvs. Aprox. **$1,000,000.** J. B. McCrary Eng. Co., 22 Marietta Street Bldg., Atlanta, Ga., consult. engr. CD 5/2/46—ENR 5/16/46.

Tex., Fort Worth—Tarrant County Water Control & Imprvt. Dist. 3, Courthouse, will not construct sewage treatment plant. **$135,-000.** (**Correction**—type of work.) CD 11/10—ENR 12/9.

Tex., Vidor—Orange County Water Control & Imprvt. Dist. 1, c/o W. Wilson, voted bonds, sanitary sewer expan., imprvs. **$249,-000.** Koch & Fowler, Gr. Natl. Life Bldg., consult. engrs.

Wyo., Wheatland—City, J. A. Cole, mgr., plans by Robert L. Streeter, engr. and archt., Box 2010, Casper, sewage disposal sys. with treatment plant, separate sludge digestion, trickling filter type plant.

Ont., Fort William—Municipality, sewage disposal sys., Nebbing Ave., west of C. N. R. tracks. **$550,000.** Proctor, Redfern & Laughlin, Excelsior Bldg., Toronto, engrs. CD 3/5—ENR 2/19.

●**Ont., Oshawa**—Municipality, plans by **W. T. Dempsey,** city engr., sewage disposal plant. **$1,000,000.** Meadows & Assoc., 4 Grange Rd., Toronto, engrs.

Que., Dorval—Municipality, collector sewer St. Joseph St. **$600,000,** J. A. Lalonde, **$58** Dunlop Ave., Outremont, Que., engr. CD 11/11.

BRIDGES

Ga., Atlanta—City, underpass at intersection Gordon, Glenn, Whitehall and Murphys Sts. **$400,000.** W. H. Armstrong, 732 W. Peachtree St., consult. engr.

Pennsylvania—Pennsylvania Turnpike Comn., 11 N. 4 St. Harrisburg.

Cumberland and York Counties—bridge carrying Phila. exten. of Pennsylvania. Turnpike over Yellow Breeches Creek.

Dauph'n Co.—bridge carrying Phila. exten. of Pennsylvania Turnpike over Swatara Creek. Modjeski & Masters, State Street Bldg., Harrisburg, consult. engrs. R. B. Stone, c/o owner, ch. engr.

●**Pa., Pittsburgh**—Bd. Comrs. Allegheny Co. County Office Bldg., 800 ft. steel span bridge, approx. 2,000 ft. 4-lane approaches, 52 ft. wide incl. walks, Stoke Twp.-Neville Island Bridge. **$3,000,000.**

●**Wis., Milwaukee**—City, 2,000 ft. concrete, steel viaduct, 70 ft. wide, on S. 35 St. **$1,-000,000.** Manuel Cutler, city engr. CD 12/3/43—ENR 12/9/43.

STREETS AND ROADS

Calif., Los Angeles—Bd. Supervs. Los Angeles Co., 501 Hall of Records, imprv. Redfern Ave., curbs, gutters, sidewalks, Lennox, **$108,200;** street imprvs., Ocean Gate Ave., curbs, gutters, sidewalks, Hawthorne, **$381,-370.** C. E. Arnold, co. engr.

Kan., Olathe—City, City Hall, repairing paved streets, **$425,000.** C. G. Payne, city engr.

Minn., St. Paul—City, M. Rosen, comr. P. Wks., City Hall, widen, repave Randolph Ave. from W. to Chatsworth Sts. **$140,000.** G. M. Shepard, city engr. CD 2/17/44—ENR 3/9/44.

Neb., Omaha—Douglas Co., John Slavik, clk., Courthouse, blacktop 6 mi. roads. **$127,-000,** pave road connection Omaha with Ralston, **$100,000.** Earl Whittaker, co. maintenance engr.

●**Oklahoma**—State Hy. Dpt., Oklahoma City.

Atoka Co.—High type paving 12.3 mi. U. S. 69 north from Caddo to the county line, **$650,000.**

Beaver Co.—intermediate paving 8 mi. U. S. 70 south of Beaver, **$225,000.**

intermediate type surfacing U. S. 63 west from the Harper County line, **$200,000.**

Cleveland Co.—wid'n., resurf. 7.34 mi. U. S. 66 south from Norman to the county line, **$250,000.**

Coal Co.—high type paving 8 mi. U. S. 75 from Coalgate south to the Atoka Co. line, **$395,000.**

Cotton Co.—drainage, low type surf. 9.2 mi. U. S. 70 east of Randlet, **$210,000.**

Creek Co. — drainage, bridges, high type paving 4.8 mi. U. S. 66 from Sapulpa to the Tulsa Co. line, **$383,000.**

Garvin Co.—high type paving 11.82 mi. St. Hy. 29 from Elmore to Wynnewood, **$710,000.**

Jackson Co.—drainage, low type paving 6 mi. St. Hy. 34 south of the Greer Co. line, at Martha, **$293,000.**

Kingfisher Co.—low type surf. 8 mi. St. Hy. 51 east from Hennessey **$190,000.**

Latimer Co.—intermediate surf. 5 mi. St. Hy. 2 south of Wilburton, **$250,000.**

Leflore Co.—base regrading, intermediate surf. 5 mi. U. S. 59 from Heavener south to Poteau River, **$250,000.**

Lincoln Co.—wid'n. and bridge rebuilding 5.3 mi. U. S. 66 east from Oklahoma Co. line, at Wellston, **$410,000.**

Mayes Co.—drainage, high type paving 6.5 mi. St. Hy. 2 west of Pryor, **$647,500.**

McIntosh Co.—high type paving 7 mi. U. S. 266 west from Checotah, **$600,000.**

Murray Co.—intermediate paving 20.5 mi. St. hy. 12 from Ravia to Sculling, **$661,125.**

Oklahoma Co.—wid'n. 12.9 mi. U. S. 66 from Arcadia to Lincoln Co. line, **$778,000.**

Pittsburg Co.—paving 11 mi. from near Checkie to the county line at Kiowa, **$373,-200.**

Roger Mills Co.—drainage, low type surf. 8 mi. St. Hy. 33, **$270,000.**

Sequoyah Co.—intermediate surf. 5.75 mi. U. S. 59 from Adair Co. line to Marble City, **$218,000.**

Stephens Co.—drainage and wid'n. 2.07 mi. U. S. 81 through Duncan, **$300,000.**

Tulsa Co.—drainage, bridge and four-lane pavement 2.15 mi. U. S. 66 from Creek Co. line to Tulsa city limits, **$276,500.**

Washington Co.—high type paving 1.5 mi. U. S. 75 from Bartlesville east to new location on U. S. 75, **$157,000.**

high type paving 11.8 mi. U. S. 375, from Ramona to Bartlesville, **$622,500.**

Washita Co.—drainage, low type surf. 7.1 mi. St. Hy. 41, west of Cordell, **$207,000.**

Woodward Co.—grading, low type surf. 8.6 mi. St. Hy. 15 from Moreland east to county line, **$233,750.** S. K. McClelland, c/o owner, ch. engr.

Okla., Oklahoma City—City, traffic artery from 36 to Grand Blvd. on North Robinson St. **$300,000.** H. E. Chase, City Hall, engr. CD 10/29/45—ENR 11/15/45.

●**Pennsylvania** — Pennsylvania Turnpike Comn., 11 N 4 St., Harrisburg.

Chester Co.—grading, drainage, structures 4.6 mi. Sec. 28 A, Phila. Exten. of Pennsylvania Turnpike.

grading, drainage, structures, 4.2 mi. Sec. 27 C., Phila. exten. of Pennsylvania Turnpike.

grading, drainage, structures, 3.8 mi. Sec. 27B, Phila. exten. of Pennsylvania Turnpike, Michael Baker, Jr., Rochester, consult. engr.

grading, drainage, structures 4.5 mi. Sec. 27 A, Phila. exten. of Pennsylvania Turnpike.

grading, drainage, structures 4.2 mi. Sec. 26 C, Phila. exten. of Pennsylvania Turnpike.

Lancaster, Chester and Berks Counties—grading, drainage, structures 6.1 mi. Sec. 26 B, Phila. exten. Pennsylvania Turnpike, Capitol Eng. Co., Dillsburg, consult. engr.

Lancaster Co. — grading, drainage, structures 4.7 mi. Sec. 26 A, Phila. exten. of Pennsylvania Turnpike.

grading, drainage, structures 3.8 mi. Sec. 25 C, Phila. exten. of Pennsylvania Turnpike.

grading, drainage, structures 2.7 mi. Sec. 26 B. Phila. exten. of Pennsylvania Turnpike.

grading, drainage, structures, 4.9 mi. Sec. 25 A, Phila. exten. of Pennsylvania Turnpike, Gannett, Fleming, Corddry & Carpenter, 604 N. 2 St. Harrisburg, consult. engr. R. B. Stone, c/o owner, ch. engr.

●**Pennsylvania** — Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg.

66 mi. exten. Pennsylvania Turnpike from Irwin Pa. to Ohio State Line near Wampam, Pa., east of Peteraburg, O., 4 lane divided low grade roadway; bridges over Alleghany River near Oakmont; over Beaver River near Homewood. **$35,000,000.** CD 6/4—ENR 6/24.

Chester Co.—grading, drainage, structures 7 mi. Sec. 28 B, Phila. exten. of Pennsylvania Turnpike, Michael Baker, Jr., Inc., Rochester, consult. engr.

Cumberland Co.—grading drainage, structures 5.6 mi. Sec. 21 B, Phila. Exten. of Pennsylvania Turnpike.

6.1 mi. Sec. 21 A, Phila. exten. of Pennsylvia Turnpike. Capitol Eng. Co., Dillsburg, consult. engr. R. B. Stone, c/o owner, ch. engr. CD 7/29—ENR 8/29.

●**Pennsylvania** — Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg.

Dauphin Co.—Grading, drainage, structures 4.8 mi. Sec. 23 A, Philadelphia Exten. of Pennsylvania Turnpike. **$3,000,000.**

Grading, drainage 3.2 mi. Sec. 22 B, Philadelphia exten. of Pennsylvania Turnpike, **$1,000,000,** Gannett, Fleming, Corddry & Carpenter, Inc., 600 N. 2 St. Harrisburg, consult. engr.

Lancaster Co. — Grading, drainage, structures 5.3 mi. Sec. 24 A, Philadelphia exten. of Pennsylvania Turnpike, **$1,000,000,** Michael Baker, Jr., Rochester, consult. engr. R. B. Stone, c/o owner, ch. engr.

Tex., Centerville — Leon Co. Precinct 3, Centerville, voted bonds, 30 mi. farm-to-market roads, ¼ mi. each out of towns of Jewett and Buffalo. **$250,000.**

Tex., Cuero—City, J. J. Fischer, mayor, defeated bonds, street imprvs. and asph. **$100,000.** CD 12/27.

Wash., Yakima—Yakima Co., Courthouse, grading, surfacing 6 mi. Cowiche-Tieton Dist. **$65,000;** 6 mi. new road in Gleed Dist. **$65,000.** O. E. Brashears, co. engr.

Wis., DePere—City, paving, grading streets. **$103,000.**

Ont., London—City, City Council, R. A. Dennis, mayor, City Hall, widening, straightening Oxford St., roadway at subway under Canadian Pacific Ry. tracks, **$150,000.** Roy Garrett, city engr.

EARTHWORK, WATERWAYS

†**Mass., West Springfield**—U. S. Eng., Army Base, Boston, dike and pumping stations, 1 stop log structure, Riverdale, West Springfield, **$500,000.**

AIRPORTS AND AIRBASES

Fla., Orlando—AIRPORT BLDG.—City, plans by Raymond C. Stevens, Orlando, administration bldg. at municipal airport, **$250,000.**

Fla., Pensacola — AIRPORT TERMINAL — City, terminal at municipal airport. **$150,000.**

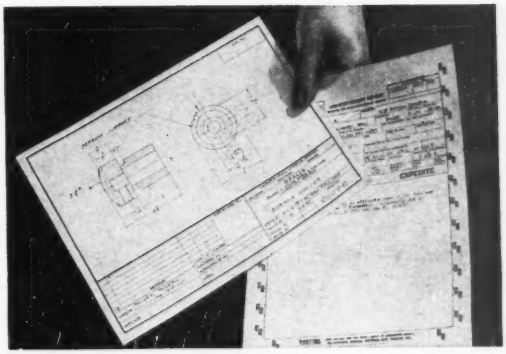
Ind., Fort Wayne—AIRPORT IMPRVS.—Bd. Aviation Comrs., Fort Wayne, paving runways, taxiways and aprons, **$100,000;** terminal bldg., **$500,000;** miscellaneous construction **$100,000;** site, engineering, and adm. costs, **$100,000.**

(Continued on page 98)

If you copy ANYTHING typed, drawn or written, you need OZALID!

It's Simple . . .

Take any letter, sales report, form, drawing . . . anything typed, drawn or written. Put it next to a sheet of Ozalid material (paper, plastic, cloth, black, blue, red, sepia) and feed it into an Ozalid machine.



It's Quick . . .

In as little as *25 seconds*, you (anyone can operate Ozalid) will have a *dry, positive, exact* duplicate of your original material! Ozalid copies can be used as masters to obtain more copies! No proofreading . . . no mistakes . . . no delay!

It's OZALID!

You can make Ozalid copies any length, and almost any width. You can make them directly from translucent material, and from opaque originals with an intermediate step.

Write today on your letterhead for FREE booklet which tells the full Ozalid story, shows all the Ozalid prints, or consult your classified directory for local distributor.

***Don't copy... use* OZALID!**

Dept. 15, Johnson City, N. Y.

A Division of General Aniline & Film Corporation. *"From Research to Reality"*

New 16-TON

TOURNAROCKER has a new type simplified dump, multi-cable controlled by an electric motor that eliminates hydraulic troubles, tips body beyond vertical position for clean fast dump to grizzly, hopper or over the bank. Four-wheel disc-type air brakes with 4108 sq. inches of braking area give safe control even when working over high soft shoulders. Big tires of two-wheel prime mover pull easily away from bank as load is dropped. Drivers are always on the firm footing — never on the loose non-compacted bank.

GIANT TIRES (21.00 x 25) give better flotation, let you haul easily through mud or over rough rock dumps with minimum tire wear. You get positive powerful traction through mud and on soft fills, because, with one drive wheel in soft footing, the Tournamatic Differential automatically delivers 4 times the power to wheel on firmest ground.

TWO-WHEEL PRIME MOVER, with positive-control electric steer through gear on king pin, gives you easy, accurate control; ability for short turns even in soft and loose footing; improved weight distribution for steering and traction; reduction in weather delays.

LOW CENTER OF GRAVITY means greater operating safety — no jackknifing and better stability on slopes and rough going. It is absolutely safe on the fill. The load rests on the ground when the rear wheels are backed over the bank . . . a safety feature you get only with this new LeTourneau rear-dump hauling unit.

EASY TO SPOT FAST at the shovel, Tournarocker gives a big 7' 10½" x 11' 2" target for fast loading. Easy riding and operated by push-button controls, the new, safe Tournarocker has proved extremely popular with operators. Owners like the Tournarocker too, because on many jobs it eliminates the need for a dozer on the fill.

YOUR LeTOURNEAU DISTRIBUTOR is ready to show you what Tournarocker can do for you. It has been tested and proved in the field on jobs like yours. Write . . . call . . . or see him TODAY!

Send for Complete Facts

To: R. G. LeTOURNEAU, Inc., PEORIA, ILL. Please send information on E16 Tournarocker.

☐ Specifications ☐ Price ☐ Delivery ☐ Would like job analysis on present operations

NAME..... TITLE.....

COMPANY..... TYPE OF BUSINESS.....

STREET..... CITY, STATE.....

Would also like information on TOURNAPULLS: ☐ 7-yard "D" ☐ 13.3-yard "C" ☐ Big 30-yard "B"

REAR-DUMP hauling unit

90° turns . . . vertical dump . . .
puts load over edge of bank . . .
drive wheels stay on firm ground . . .

Load . . . in big target

Haul . . . big loads safely

Dump . . . fast and clean

SPECIFICATIONS
E16 Tournarocker

16.5 yd. (heaped) capacity . . . 16 tons
150 h. p. Diesel engine
4 speeds forward to 20 m. p. h.
15′ wheelbase
7′ 10½″ x 11′ 2″ top opening of bowl
Positive electric power steer
Finger-tip electric control
Power-proportioning differential
90° turn — min. turning radius 12′ 6″
4-wheel air brakes
4108 sq. in. braking surface
Weighs approximately 30,100 lbs.
Big 21.00 x 25 tapered-bead tires
(Also available with 240 h. p. and 40-ton capacity)

Tournarocker, Tournamatic-Trademark
Tournapull-Trademark Reg. U. S. Pat. Off. C101

LETOURNEAU TOURNAROCKERS

PEORIA ILLINOIS

HIGH SPEED on RUBBER PLUS TRACTION ADVANTAGES of a CRAWLER

"We're Going to Steel Frame the School Jobs Entirely with MACOMBER Units"

STANDARDIZATION SPEEDS CONSTRUCTION

Without obligation please forward your New Longspan Catalog to:

Name ----------

Firm ----------

Address ----------

Get your jobs scheduled now for Spring delivery

FOR GYMNASIUMS, FIELD HOUSES, LABORATORIES, SHOP BUILDINGS AND MAJOR SCHOOL PLANT ADDITIONS

★ MACOMBER STEEL ROOF TRUSSEES (To 180 Foot Spans). Designed to American Institute of Steel Construction standards for spanning wide unobstructed areas over auditoriums, gyms and shop buildings.

★ MACOMBER LONGSPANS (To 72 Foot Spans). Designed to A.I.S.C. Standards for supporting either floors or roofs over wide areas. Made in parallel or sloping chord designs for level or drainage conditions.

★ MACOMBER BAR JOISTS (To 40 Foot Spans). This is the first, the original bar joist in universal use. Available for attachment of ceiling below and any required finish above. Every floor a fire barrier.

★ MACOMBER STEEL DECKING for supporting built-up roofs. Complete with all closure and finishing plates for any roof condition.

FOR DORMITORIES — LIGHT STEEL ROOF TRUSSES, LOAD BEARING PARTITION PANELS AND V-BAR JOIST FLOOR SUPPORTS

★ MACOMBER NON-COMBUSTIBLE STEEL FRAMING builds fire out of dormitory buildings. All three of these units are nailable steel — no wood required. Ask for complete Steel Framing information.

V-BAR JOISTS AND PURLINS • V-STUDS • TRUSSES • LONGSPANS • DECKING

MACOMBER

INCORPORATED

CANTON, OHIO

IN MEXICO D. F.—MACOMBER DE MEXICO S.A. CEDRO 500

STANDARDIZED STEEL BUILDING PRODUCTS

(Continued from page 94)

LATIN AMERICA

Argentina, Buenos Aires—Republic of Argentina, Buenos Aires, plans oil refinery with daily capacity of 28,300 bbl. crude oil. Approx. $500,000. National Economic Council, Buenos Aires, engr.

Argentina, Comodoro Rivadavia—Republic of Argentina, Buenos Aires, plans fuel gas plant and distr. station. 22,000,000 Pesos appropriated. Direction General de Gas del Estado, Buenos Aires, engr.

Chile—Republic of Chile, Santiago, plans irrigation scheme North and Central Zones. 100,000,000 Pesos. Ministry of Reconstruction & Development, Santiago, engr.

Chile, Champulio—Consorcio de Administraciones, Santiago, plans wood impregnating plant. 40,000,000 Pesos.

Chile, Santiago—Republic of Chile, Santiago, plans plant mfg. farm machinery and parts. 100,000,000 Pesos. Fomento Corp., Santiago, engr.

Chile Springhill—Republic of Chile, Santiago, plans warehouse. 1,000,000 Pesos. Ministry of Economy & Commerce, Santiago, engr.

Chile, Temuco—Republic of Chile, Santiago, plans WW sys. imprvs. 1,000,000 Pesos. Dpt. P. Wks., Hydraulic Branch, Santiago, engr.

Colombia, Bogota—Central Americana de Distribucion Yamhure Estefan y Cia, Carrera 13, Apartado Aereo, 3499, Bogota, plans wood pulp mill. $500,000.

Colombia, Bogota Sabana—Republic of Colombia, Bogota, plans earth fill dam on Sisga River to provide flood control, etc. 3,900,000 Pesos.

●**Mexico**—Petroleos Mexicanos (Sen. Antonio J. Bermudez, mgr. dir.), Juarez, 104, Mexico, D. F., plans oil pipeline Reynos fields, Tamaulipas State to Monterrey, Torreon, Saltillo, Ciudad Lerdo and Gomez Palacios, north central Mexico, $4,000,000; oil pipeline Minatitlan, Vera Cruz State-Salina Cruz, Oaxaca State, $5,500,000. CD 3/25.

Mexico, Manzanillo — Republic of Mexico, Mexico City, plans entirely new diesel electric plant, 1,400 kw. capacity. Over $500,000.

Mexico, Mexico City — Fabricas de Motores Anahuac (Mexican Govt.-Owned), Carretera Mexico-Puebla, Mexico, D. F., plans farm tractors factory. $6,150,000.

Mexico, Mexico City—Mexico City Govt. (Departamento Central) Palacio Municipal, Mexico, D. F. Lic Fernando Casas Aleman, mayor, plans 12 trans-street tunnels relieving pedestrian traffic congestion. $350,000 each.

Mexico, Mexico City—Pablo Bush Romero and Hector Ponce Sanchez, Paseo de la Reforma, 115, Mexico City, plans irrigation pipes and implements factory. $1,500,000.

Mexico, Tuacotalpan—Bernard Bolnie, Direccion Conocido, Orizaba, Vera Cruz, plans sugar can bagasse paper factory. $2,000,000.

Mexico, Toluca — Municipal Govt., Palacio Municipal, Toluca, plans WW sewerage, paving and illumination. $750,000.

Panama, Panama City—Republic of Panama, Panama City, plans race track. $2,000,000. Ministry of Labour, Social Welfare & Public Health, Panama City, engr. CD 5/24/46—ENR 5/30/46.

PUBLIC BUILDINGS

●**Ala., Tuscaloosa**—Druid City Hospital, c/o Charles H. McCauley, Jackson Bldg., Birmingham, hospital, $2,794,581.

●**Calif., Berkeley**—State Div. Architecture, Anson Boyd, state archt., P. Wks. Bldg., Sacramento, plans by W. D. Peugh, 333 Montgomery St., San Francisco, laboratory and office bldg., for State Dpt. Pub. Health. $2,800,000.

•**Calif., Los Angeles**—Bd. Educ., 125 S. San Pedro St., plans by Gordon L. Kaufmann & J. E. Stanton, 627 S. Carondolet St., Venice Area Junior High School Plant, $1,000,000; plans by A. Nibecker, 1425 S. San Pedro St., Venice Area Junior High School, 20 frame bldgs., classroom, library, shop, etc., $240,000.

●**Calif., Los Angeles**—Bd. Supervs. Los Angeles Co., 501 Hall of Records, plans by Claude Beelman, 1019 Union Bank Bldg., Wayside Honor Farm addns., alterations, hospital, gate house, administration, dormitory, recreation bldgs., etc., Castaic. $1,601,000.

●**Calif., Riverside**—State Div. Architecture, Anson Boyd, state archt., P. Wks. Bldg., Sacramento, plans by Risley & Gould, 3502 W. 3 St., Los Angeles, Southern California School for Deaf. $2,900,000.

Calif., San Luis Obispo—State Div. Architecture, Anson Boyd, state archt., P. Wks. Bldg., Sacramento, plans by Allison & Rible, 650 South Grand Ave., Los Angeles, science and classroom bldg., etc. at Calif. State Polytechnic College, $823,000.

●**Calif., Vallejo**—State Div. Architecture, A. Boyd, state archt., P. Wks. Bldg., Sacramento, plans by Berge M. Clark & Walter Stremquist, 321 Channing Ave., Palo Alto, classroom, dormitory and administration bldg., for Calif. Maritime Academy, $1,200,000.

Calif., Yountville—State Div. Architecture, Anson Boyd, state archt., P. Wks. Bldg., Sacramento, plans by Albert F. Roller, 1 Montgomery St., San Francisco, women's employees' quarters, $300,000; plans by Frederick H. Meyer & Albert J. Evers, 1 Montgomery

St., San Francisco, women's domiciliary barracks, $450,000, both at Veterans Home.

●**Conn., Danbury**—State Bd. Educ., 249 High St., Hartford, administration bldg. with classrooms, $1,665,000; laboratory bldg. with classrooms, $835,000; heating plant, $100,000, at State Teachers' College. CD 1/15/47—ENR 2/6/47.

Conn., Hartford — City, Hartford Housing Auth., 846 Asylum Ave., plans by Kane & Fairchild, 49 Pearl St., six to eight 4-room frame apartments per unit, Granby, Durham and Burnham Sts. $300,000. CD 1/17/45—ENR 2/8/45.

●**Conn., New Britain**—State, Dr. Finis E. Engleman, comr. Educ., 249 High St., Hartford, arts and science unit, $1,586,000; men's dormitory, $848,000; Marcus White Dining Hall and Kitchen, $500,000; grading athletic field, $50,000, at State Teachers College. CD 1/15/47—ENR 2/6/47.

●**Conn., New Haven** — State, Dr. Finis E. Engleman, comr. Educ., 249 High St., Hartford, administration bldg. with classrooms, $2,972,000; physical education bldg., $1,050,000; dining hall, $272,000; maintenance bldg., storage and heating plant, $306,000; road constr., grading, $250,000; tunnel connecting heat plant with bldgs., $75,000 at State Teachers College. CD 1/15/47—ENR 2/6/47.

●**Conn., Norwich**—State Comptroller, 114 State Capitol, Hartford, plans by Ebbets Frid & Prentice, 863 Asylum Ave., Hartford, brick, steel, concrete, Norwich State Hospital. $1,000,000. CD 8/13/47—ENR 9/4/47

Conn., Southington—Town, Albert J. Dudsick, chn. Southington Housing Auth., 30 Center St., plans by Pedersen & Tilney, 155 Orange St., New Haven, 30 frame dwelling units, Pleasant and Hobart Sts. $250,000. CD 12/27.

●**Conn., Storrs**—State of Conn., A. N. Jorgensen, pres., University of Connecticut, brick, steel engineering bldg. addn., $800,000; pharmacy bldg., $750,000; dairy-animal unit, $800,000; brick, steel administration bldg., $400,000; social sciences, $700,000; fine arts $400,000; remodeling, repairing college bldgs., $570,000; underground utility line extens., $350,000; brick, steel, concrete central heating plant, $300,000; concrete maintenance unit addn., $200,000; stadium, incl. athletic field, rein.-con. stands, $500,000, all foregoing at University of Connecticut.

Conn., Westbrook—State Col. J. P. Nolan, State Armory, Hartford, brick, concrete armory, $350,000.

Conn., Weston — Town, Curtis Benjamin, chn. Bldg. Com., Weston, plans by E. F. O'Dwyer, 78 Main St., Westport, 1 story, bsmnt., brick, 7 classroom school, incl. kindergarten, cafeteria, kitchen, offices and teachers room and 1 story brick 5 bus school garage. Weston Rd. $350,000.

Conn., Willimantic—State, Dr. Finis E. Engleman, comr. Educ., 249 High St., Hartford, women's dormitory, $866,000; converting present women's dormitory for men, $30,000; grading athletic field, $50,000, at State Teachers College.

●**Fla., St. Petersburg**—City St. Petersburg, plans by De Witt & Swank, 2025 Cedar Springs Rd., Dallas, Tex., municipal hospital, $3,000,000. CD 1/5/47—ENR 1/25/47.

●**Fla., Tampa** — Hillsborough Co., Tampa, plans by Smith, Reynolds & Hills, 227 Park St., Jacksonville, courthouse $3,000,000.

●**Ga., Atlanta**—Dekalb and Fulton Counties, c/o Abreu & Robeson, archts., 22 Marietta St. Bldg., negro hospital. $1,500,000. CD 1/16/46—ENR 3/7/46.

Ga., Atlanta—Fulton Co. Bd. Educ., Courthouse, Fairburn Elementary School; Newton Estates Elementary School; Rock Spring Elementary School. $250,000 each.

Ill., Chicago—Chicago Housing Auth., 343 S. Dearborn St., plans by Loewenberg & Loewenberg, 111 W. Monroe St., 700 units, Site 7, Throop Loombs, 14 Pl., 15 St.; plans by E. F. Quinn & Assoc., 134 N. La Salle St., 200 units, Site 8, Princeton, Archer and 23 Sts.; plans by George F. & Wm. Keck, 612 N. Michigan Ave., 250 units, Site 9, South Park, 36 and 38 Sts.

●**Mass., Belmont**—Town Housing Auth., C. L. Weber, chn., 86 Stone Rd., plans by Edward J. Shields, 1245 Hancock St., Quincy, 100 unit veterans housing. $1,625,237.

Mass., Greenfield—Town Housing Authority, Eugene, L. Bond, chn., City Hall, plans by Sargent, Webster, Crenshaw & Folley, 2112 E. Erie Blvd., Syracuse, N. Y., 72 unit veterans housing. $720,000. CD 8/23—ENR 9/2.

Mass., Marlboro—Marlboro Hospital, R. C. Morse, pres. Bd. Trustees, Main St., plans by Curtin & Riley, 45 Newbury St., Boston, hospital addns., alterations, $500,000.

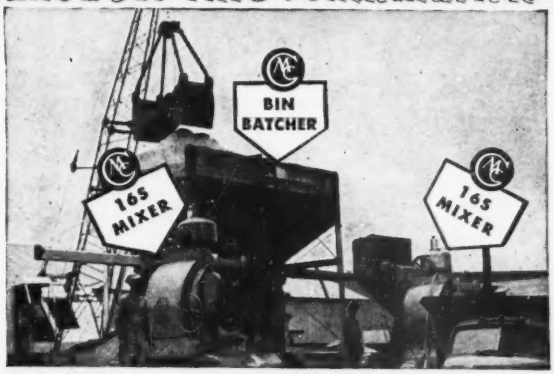
●**Mass., Waltham** — City Housing Authority, C. A. Lawless, chn., plans by Aldo A. Minotti, 681 Main St., twenty-five 2 story, bsmnt., 145-unit brick garden apartments, Prospect Hill Rd. $1,500,000. R. H. Barnes & Co., 681 Main St., consult. engrs. CD 8/13—ENR 9/2.

Mass., Worcester — Worcester Co., Court House, 2 Main St., 3 story, 80x180 ft. court house addn. $800,000. CD 12/22/43—ENR 1/13/44.

●**Neb., Lincoln** — City, municipal auditorium. $2,500,000. D. L. Erickson, city engr. CD 1/17/45—ENR 2/8/45.

N. Y., Greene—Central School Dist. 1, Towns of Greene, Smithville and Coventry, Greene, grade and high schools. $800,000.

You can't beat this combination



It's double speed ahead now!

Here's a *portable* Central Plant that *amazingly* reduces pouring costs. It's CMC 165 mixers *in tandem* with CMC *two-bin* BIN-BATCHER. When you buy, select CMC equipment and you get the *best*. Every piece of CMC equipment *is built to take the punishment of long service!* Write today for latest catalog.

CONSTRUCTION MACHINERY CO'S.
WATERLOO, IOWA, U.S.A.

MIXERS—PUMPS—HOISTS—SAWS
DUMPOVER CARTS

THEY Roll Along on ROGERS TRAILERS

Everyday Everywhere

MORE AND BIGGER LOADS

An impressive number of the biggest contractors TODAY repeatedly put their confidence in ROGERS TRAILERS long proven ability to "deliver the goods" and "stand the gaff" over long periods of heavy usage.

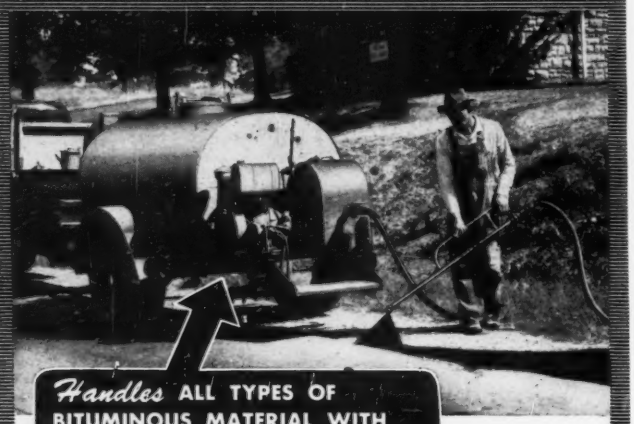
Smaller operators, too, find in the extensive ROGERS LINE, the answer to their particular trailer requirements with proper capacity, road clearance, type of construction and strength with lightness.

We solicit inquiries which make your trailer problems our problems and we generally come up with the correct answer.

ROGERS BROTHERS CORPORATION
DESIGNERS and BUILDERS of HEAVY DUTY TRAILERS
SINCE 1915
135 ORCHARD ST. ALBION, PENNA.

MILES OF SHOULDER

Easy and Fast with **Standard Steel "S-J"**



Handles ALL TYPES OF BITUMINOUS MATERIAL WITH EFFICIENCY — ROLLS WITH SPEED FROM JOB TO JOB — MORE MILES OF WORK PER DAY

Raveling shoulders, chuck holes, surface cracks and all other road breaks quickly run into heavier and more costly damage under heavy day after day traffic. The Standard Steel "S-J" can be used with equal success on emergency spot jobs as on "miles of shoulder" or laying driveways, school grounds or any other secondary construction. A thoroughly dependable "S-J" will save money and do a top grade job in fast time on many jobs that are in the "big equipment class". Get the facts on "S-J" before you consider any other type of similar equipment.

WRITE FOR CATALOG "S-J"

OTHER PRODUCTS

Asphalt Pressure Distributors, Tar Kettles, Patch Rollers, Supply Tanks, Tool Heaters, Asphalt Tools, Street Flushers, Construction Brooms.

Built to Standard *the Highest*

S-J-1

Standard Steel Works

GUNITE

PNEUMATICALLY PLACED CONCRETE
DENSE · DURABLE · HIGH STRENGTH

for

Restoring Disintegrated Concrete
Dam, Dock and Bridge Repairs
Steel Encasement and Fireproofing
Sewer, Water Pipe and Penstock Linings
Stack and Bunker Linings
Wood Pile Casings—Pressure Grouting
Prestressed Tanks and Silos

Get in touch with us for engineering data and estimates

GUNITE CONSTRUCTION CORPORATION
420 LEXINGTON AVE., NEW YORK 17, N.Y.
MUrray Hill 3-7699

MOTT Diamond Core Drilling Contractors

FOUNDATION TESTING
for
Bridges, Dams, Heavy Structures
PRESSURE TESTING

MFR'S DIAMOND & SHOT CORE DRILLS, GROUT MIXING MACHINES, PACKERS AND GROUT PUMPS

MOTT CORE DRILLING CO.
HUNTINGTON, W. VA.

●**N. Y., Rome** — Bd. Educ., Administration Bldg., N. George St., plans by Starrett & Van Vleck and Reginald Marsh, 101 Park Ave., New York, Zone 17, Junior High School and elementary school. $3,000,000. CD 2/15/46—ENR 5/16/46.

●**O., Cuyahoga Falls**—State Welfare Dpt., Columbus, 2 wings for mental receiving hospital, $1,000,000; laundry and power plant, $100,000; mental receiving hospital addn. $564,000.

Pa., Bradford—Bradford Hospital, Bradford, plans by Thomas K. Hendrys, 165 Interstate Parkway, 5 story, bamnt, 50x200 ft. hospital addn. $500,000. CD 11/12—ENR 11/25.

●**Pa., Phila.**—Bd. Educ., 21 St. and Parkway, plans by G. W. Pepper, Jr., Lewis Tower Bldg., crippled childrens school. $1,100,000. Moody & Hutchison, mechanical engr., H. B. Nicholson, structural engr., and A. Anderson, engr. c/o owner. CD 7/16—ENR 8/5.

Pa., Sheakleyville—Consolidated Bd. Educ. of Sheakleyville, Sandy Creek and Deer Creek Twps. plans by The Thayer Co., 408 Greer Bldg., New Castle, 22 room grade and high school $500,000.

●**Pa., Upper Darby**—Upper Darby Twp. School Dist., Upper Darby, plans by T. Norman Mansell, 262 S. 17 St., Phila., school, Ashurst Ave and Bunting Lane. $1,000,000; plans by Roy W. Banwell & W. Pope Barney, 1411 Walnut St., Phila., school, Bond, Marvine and Agnew Rds., $1,000,000.

Pa., Wynnewood—Lower Merion Twp. School Dist., F. M. DuBois, supt., Ardmore, plans by George Wharton Pepper, Jr., 225 S. 15 St., Phila., Zone 2, Penn Wynne School. $300,000. S. A. Jellett & Co., 1200 Locust St., Phila. mechanical engr. H. B. Nicholson, Broad Street Station Bldg., Phila., structural engr. CD 11/21/46—ENR 12/12/46, under Pa., Rosemont.

●**Tenn., Nashville**—State of Tennessee, Nashville, plans by Hart, Freeland & Roberts, Third Natl. Bank Bldg., 400 bed state tuberculosis hospital. $3,000,000. CD 4/26/46—ENR 7/4/46.

Tex., Aldine (Orange P.O.)—Aldine School Dist., c/o L. C. Courtney, supt., cancelled bond election to be held Jan. 28, masonry school, gymnasium, school addn. $300,000. CD 12/30—ENR 1/20.

Tex., Deer Park—Deer Park Independent School Dist., Deer Park, plans by Harry D Payne, 3308 Main St., Houston, masonry high school, convert existing bldg. into elementary school, enlarge physical education bldg., garage and shop, football field, concrete outdoor swimming pool, appurtenances; sewage disposal plant. $500,000. CD 4/2—ENR 4/15.

Tex., Houston—Houston Independent School Dist., 1600 Washington St., plans by George & Able Pierce, 4511 Kyle St. masonry school addn., W. University Place, $250,000; plans by L. A. Glover, 3116 Austin St., addn. and rehabilitate Charles S. Deady High School $250,000. CD 1/31/46—ENR 5/16/46.

●**Tex., Terrell** — State Bd. Control, Capitol Bldg., Austin, 550-bed Terrell State Hospital $1,500,000. Tatum, Alexander & Quade, 2812 Fairmount St., Dallas, consult. engrs.

Wash., Bellingham—City, City Hall, plans by G. W. Bentley, Bellingham, library. $575,000. CD 11/19—ENR 12/23.

●**Wash., Seattle**—King Co., County-City Bldg., Zone 4, plans by G. W. Stoddard, Shell Oil Co. Bldg., juvenile detention home. $1,250,000. CD 11/10—ENR 11/25.

●**Wash., Seattle**—School Dist. 1, 810 Dexter Ave., plans by Mallis, DeHart & Hopkins, Lyon Bldg., Zone 4, 3 Junior High Schools $2,000,000 each. CD 11/12—ENR 11/25.

Wash., Tieton—School Dist., Tieton, school $250,000.

●**Wyo., Cheyenne**—State, A. G. Crane, acting gov., State Capitol Bldg., plans by Frederick H. Porter, engr. and archt., 1009 E. Lincolnway, 3 story, 46x800 sq. ft. state office bldg. Approx. $1,000,000.

Alaska, Juneau—City, City Hall, Juneau, civic center with swimming pool. $250,000.

Alta., Fairview—Dpt. P. Wks., Edmonton, plans by A. Arnold, c/o owner, agricultural school, Approx. $500,000.

Alta., Oliver—Province of Alberta, Edmonton, tuberculosis sanatorium. $500,000. Dpt. P. Wks., Edmonton, engrs.

B. C., Port Alberni—West Coast General Hospital, H. E. Taylor, administrator, Port Alberni, ratepayers approve, hospital, Approx. $500,000. Gardiner & Thornton, 1665 W. Broadway, Vancouver, archts. CD 6/24—ENR 6/8.

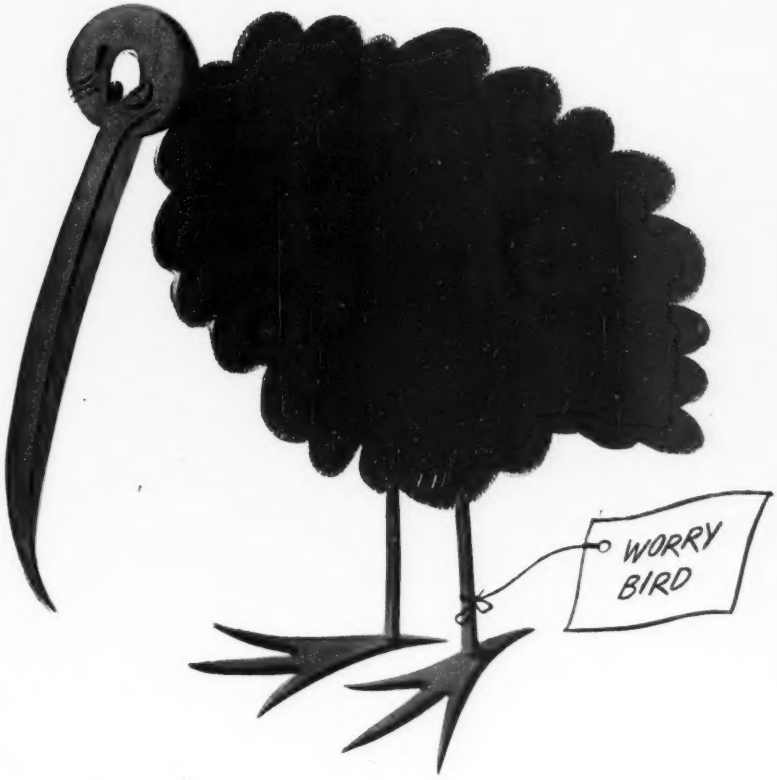
N. S., Dartmouth—Dominion Govt., Dpt. National Defense, Cartier Sq., Ottawa, Ont., dwellings for personel in Dartmouth area. $500,000. CD 3/10—ENR 4/1.

●**N. S. Truro**—Province of N. S., Halifax, science bldg., $300,000; dormitories, gymnasium, swimming pool addn. to Agricultural College, $700,000. Dpt. P. Wks., Halifax, engr. CD 7/7/45—ENR 2/22/45.

●**Ont., Hamilton**—Dominion Govt., Dpt. Labor, Ottawa, regional and city office bldg., for Unemployment Insurance Comn. $1,250,000. Dpt. P. Wks., Ottawa, Ont., engr. CD 12/30/46—ENR 2/7/46.

Ont., Kitchener — Canadian Commercial Corp., 70 Lyon St., Ottawa, armory, for Dpt. National Defense, Cartier Sq., Ottawa, $500,000. CD 1/23/46.

Ont., London—Canadian Commercial Corp., 70 Lyon St., Ottawa, armory, for Dpt. National Defense, Cartier Sq., Ottawa, $500,000.



Are you worried by new equipment costs?

GOING to buy new equipment? Or get along with what you have? Either way, you need Quaker State HD Oil. Here's why. Old or new, vehicles have to earn their utmost to offset high replacement costs—and that means better lubrication is a "must." Oil that not only lubricates efficiently but helps keep engines cleaner. Quaker State HD Oil does just that. It's specially designed to lubricate engines better—and longer. Keep them free of ring-clogging, valve-sticking sludge, gum and sticky "varnish." Made solely from pure Pennsylvania grade crude oil, known the world over for quality. Always dependable, uniform, you'll find Quaker State HD Oil can help amazingly to keep your vehicles on the road, making money for your business.

QUAKER STATE HD OIL
AND SUPERFINE LUBRICANTS

Use Quaker State HD Oil for trucks, buses, taxis, tractors,
Use Quaker State Motor Oil for passenger cars.

QUAKER STATE OIL REFINING CORPORATION • OIL CITY, PENNSYLVANIA

digging up

Windshields and Show Windows

WAUKESHA Super-Duty DIESEL (Model 6-WAKD) six-cylinder, 6¼-in. x 6½-in., 1197 cu. in. displ., powers this 2½-yd. Lorain Shovel.

● You don't just dig up windshields and show windows off hand. You have to dig silica sand for the glass first. That takes a shovel like this 2½-yd. Lorain owned by the Silica Sand Co., Birmingham, Mich. It's a big-biting, deep-digging, speed shovel — with a Waukesha Diesel that is power-packed to pass the pay dirt and keep those dump trucks coming and going!

Neither dust, nor dirt, nor digging fazes the Waukesha Super-Duty Diesel. It's rugged—and protected. Remarkably responsive, too. Lively but smooth and shudder-free. And clean burning, with high fuel economy. Its unique, patented combustion chamber, spherical in shape, and the two swirl cups in piston crown, give moderate peak pressures and complete as well as clean burning—for high efficiency at all times within the engine's rated load and speed.

Hard wet cylinder sleeves, hardened crankshaft with precision bearings, simple overhead valve mechanism, gear-driven water pump cooling, and pressure oiling—all the features that make it easy to understand and simple to service. Get the whole story in Bulletin 1415.

WAUKESHA MOTOR COMPANY, WAUKESHA, WIS.

NEW YORK • TULSA • LOS ANGELES

WAUKESHA *Diesel* ENGINES

●**Ont., London**—Hospital for the Chronically Ill, London, 3 story, 44x45 ft., and 6 story, 44x250 ft. rein.-con., steel, brick, stone hospital. **$1,000,000.**

Ont., St. Catherines—General Hospital Bd., 2 William St., ratepayers approve hospital addn., **$625,000.** Govan & Assoc., 515 Jarvis St., Toronto, archts. Stone & Webster Eng. Corp., 174 University Ave., Toronto, engrs. CD 6/4—ENR 6/17.

Ont., Scarborough—Town, Town Hall, ratepayers approved, 2 story, bsmnt. collegiate addn. **$550,000.** Carter & Coleman, 60 Front St., W., Toronto, archts. CD 5/16/47—ENR 5/29/47.

Sask., Saskatoon—Municipality, general hospital. **$850,000.**

Ont., Windsor—Canadian Commercial Corp., 70 Lyon St., Ottawa, armory, for Dominion Govt., Dpt. National Defense, Cartier Sq., Ottawa. **$500,000.**

●**P. E. I., Summerside**—Central Mortgage & Housing Corp., No. 4 Temporary Bldg., Ottawa, Ont., 500 dwellings, **$3,500,000.**

●**Que., Montreal**—General Hospital Bd., 66 Dorchester St. E., plans by McDougall-Smith & Fleming, 1235 McGill College Ave., hospital, Cote des Neiges Rd., **$8,000,000.** CD 6/6/47—ENR 6/26/47.

COMMERCIAL BUILDINGS

●**Calif., Beverly Hills**—Beverly Hills Development Co., 145 Rodeo Dr., plans by Paul R. Williams, 3757 Wilshire Blvd., Los Angeles, 5 story, 140,000 sq. ft., rein.-con. store, **$100,000.**

Calif., Daly City—F. V. deBellis, A. L. Kruezberger and United Constr. Co., 5833 Mission St., San Francisco, 100 residences, Mar Vista Sub-division, Over **$500,000.**

●**Calif., Los Angeles**—University of Southern California, 3551 University Ave., plans by Samuel E. Lunden, 400 Rowan Bldg., 4 story, brick, rein.-con. womens dormitory, Elizabeth Von Kleinamind Memorial Hall, **$1,240,000;** plans by Heitschmidt & Matchain, 449 S. Beaudry St., 2 story, brick, concrete cafeteria bldg., **$600,000;** plans by Marsh, Smith & Powell, 208 W. 8 St., 4 story, rein.-con. classroom and office, College of Letters & Arts & Sciences, **$1,000,000.** C. Raimond Johnson, 2511 University Ave., archt.

Conn., Hartford — Phoenix Fire Insurance Co., 20 Trinity St., plans by O'Connor & Kilham, 101 Park Ave., New York, N. Y., brick, steel, concrete office, Woodland St. and Asylum Ave. Over **$250,000.**

Conn., Stratford—McNeil & Blamey, Inc., Highland Ave., 40 homes, Main and E. Main Sts. **$800,000.**

Conn., Torrington — St. Patrick's Roman Catholic Parish, Rev. William P. Kilcoyne, pastor, reconstructing church, Pearl and High Sts. **$400,000.**

Del., Wilmington—Delaware Power & Light Co., 6 and Market Sts., Phila. Pa., office. **$900,000.** Fred Bear, c/o owner, ch. engr.

●**Ill., Chicago**—Clinton Realty Assn., 522 S. Clinton St., plans by A. Epstein & Sons Co., 2011 W. Pershing Rd., wrecking, reconstructing bldgs., to allow construction of Congress Street Super Hy., block bounded by Clinton, Jefferson, Harrison and Van Buren Sts. **$1,000,000.**

●**Ill., Chicago**—Schoenlank & Kirschner, Inc., archts., 1505 W. Morse St., plans by Howard T. Fisher & Assoc., 332 W. Washington St., Lincoln Road Shopping Center, Lincoln Rd. and McCormick Blvd. **$1,000,000.**

●**Ky., Louisville**—Southern Baptist Theological Seminary, 2800 Lexington Rd., dormitory to house 250 families, **$2,500,000;** library, **$750,000-$1,000,000.**

Md., Takoma Park—Owner, c/o Zink & Moehle, archts., 2514 N. Charles St., Baltimore. Zone 18, shopping center and theatre **$500,000.**

●**Mass., Cambridge**—Massachusetts Institute of Technology, 77 Massachusetts Ave., revising plans Nuclear Science and Engineering Laboratory. **$1,100,000.** CD 8/1—ENR 9/9.

Minn., Crookston—Bethesda Hospital, P. H. Stadsvold, secy. Bldg. Com., plans by Magney, Tusler & Setter, 202 Foshay Tower, Minneapolis, hospital. **$400,000.**

Minn., Northfield—Carleton College, L. M. Gould, pres., plans by Magney, Tusler & Setter, 202 Foshay Tower, Minneapolis, students union bldg. **$250,000.**

Minn., Northfield—St. Olaf College, plans by Lang & Raugland, 502 Wesley Temple Bldg., womens dormitory, **$250,000.** (Correction—owner). CD 12/15.

Minn., Red Lake Falls—St. Joseph's Catholic Church, Rev. V. Cardin & Sisters of St. Benedict, Crookston, hospital. **$380,000.**

Mo., Columbia — Presbyterian Church, 100 Stitt St., plans by Froese, Maak & Becker, 705 Olive St., St. Louis, church. **$400,000.**

Mo., Normandy (St. Louis, Zone 21, P. O.)—German St. Vincents Orphan Home, c/o Sisters of Charity, 7401 Florissant Rd., plans by A. F. and Arthur Stauder, 3608 S. Grand Blvd., St. Louis, Zone 18, 1 story, bsmnt., 70x117 ft., brick, steel, concrete gymnasium addn.

Mont., Butte—Butte Community Memorial Hospital Assn., Butte, plans by York & Saw-

yer, 101 Park Ave., New York, N. Y., hospital, $500,000. CD 1/10—ENR 1/17/46.

Neb., Omaha—Sisters of Mary, 3504 Hawthorne St., plans by Leo A. Daly Insurance Bldg., 5 story provincial house, $300,000.

●**Neb., Omaha**—The Byrne Organization, John E. Byrne, pres., 2607 Connecticut Ave. N.W., Wash., D. C., and Omaha Chamber of Commerce Housing Comm., WOW Bldg., Omaha, 600 family units, $6,000,000.

N. J., Browns Mills—Deborah Tuberculosis Sanatorium, Browns Mills, sanitorium bldg. addn., $640,000.

●**N. J., Paramus**—National Suburban Centers, Inc., 84 State St., Boston, Mass., plans by Ketchum, Gina & Sharp, Inc., 227 E. 44 St., New York 17, N. Y., shopping center on 193 acre tract, on Routes 4 and 17, $7,000,000.

N. Y., Brooklyn—De Bries Estates, Inc., 16 Court St., Zone 2, plans by M. E. Ungarfelder, 66 Court St., Zone 2, 6 story apartment, 98 Eighth Ave. corner of President St. $300,000.

N. Y., New York—Church of St. Paul The Apostle, 415 W. 59 St., Zone 19, plans by R. M. Christensen, 925 Madison Ave., Zone 21, convent, 129 W. 60 St. $250,000.

●**N. Y., New York**—New York University, Washington Square, plans by Skidmore, Owings & Merrill, 5 E. 57 St., Zone 22, hospital and medical center, 401-35 E. 30 St., 516-96 1 Ave., 400-24 E. 34 St. and 30-39 Franklin D. Roosevelt Dr. $32,744,000. CD 9/22—ENR 10/14.

N. Y., New York—199 East Mt. Eden Ave. Realty Corp., 199 E. Mt. Eden Ave., Zone 57, plans by Walter Hesse, 18 E. 41 St., Zone 17, 7 story private hospital, Mt. Eden and Morris Aves. $250,000.

N. Y., New York—Roman Catholic Church of St. Nicholas of Tolentine, Fordham Rd. and University Ave., plans by James W. O'Connor, 162 E. 37 St., Zone 16, completing upper portion church. $600,000.

N. Y., Rego Park—Certified Queens Homes, c/o Sterling M. Palm, archt., 35-74 159 St., Flushing, 5 apartments 110 St. between 62 Dr. and 63 Ave. $475,000.

●**N. Y., Rosedale**—S. & W. Praved, c/o Benjamin Braunstein, archt., 163-18 Jamaica Ave., Jamaica, dwellings, 131 Ave. between 232 and 233 Sts., $66,000; 234 St. between 131 and 133 Aves., $268,400; 236 St. southeast corner of 133 Ave., $198,300; 2 story apartment, on block bounded by 234 St., 131 Ave., 236 St. and 133 Ave., $761,800.

Okla., Oklahoma City—Oklahoma City University, 23 and Blockwalder St., plans by Sorey, Hill & Sorey, 1st. Natl. Bldg., library, $750,000.

●**Pa., Phila.**—North American Companies, 1600 Arch St., expans. program incl. office facilities. Approx. $1,000,000.

Pa., Phila.—Phila. Psychiatric Hospital, Ford and Monument Rds. and 5416 Woodbine Ave., plans by Oscar G. Stonorov, and Louis I Kahn, Juniper and Filbert Sts., hospital expan. $500,000. Isidore Rosenfield, 19 W. 44 St., New York, N. Y., consult. archt.

R. I., Providence—Charles J. Riley, 122 Bridgham St., plans by George J. Cavalieri, 370 E. 149 St., New York, N. Y., 3 story, bsmnt., brick, masonry apartment, E. Manning St. $275,000.

Tex., Dallas—Discalsed Carmelite Fathers, c/o Rev. Bartholomew Solar, Superior of the Catholic Order of the Immaculate Heart of Mary, 2503 N. Harwood St., seminary, Fort Worth Ave. near Duncancille Rd. $250,000; school a Marydale School for Boys, in Oak Cliff area $250,000.

●**Tex., Dallas**—Louis J. Hexter, Sam Lobello & Assoc., 1215 Main St., plans by Roscoe De Witt & Arch Swank, 2025 Cedar Springs Rd., masonry, steel, concrete suburban mercantile store, Preston Rd. near Northwest Hy. $1,500,000. Nieman-Marcus Co., Main and Ervay Sts., lessee. CD 4/1/47—ENR 4/10/47.

Tex., Dallas—Moody & Tips, 701 Forest Ave. Rd., residential proj. 61 acre, Skyline Airport site in Southeast Oak Cliff. $750,000.

Tex., Odessa—First Baptist Church, c/o Rev. Arthur DeLoach, pastor, Odessa, plans by Wilson & Patterson, 209 Majestic Bldg., Fort Worth, 70x140 ft., brick, stone, steel auditorium. $500,000.

●**Tex., Odessa**—Odessa Civic Hotel Corp., Odessa, plans by Walter W. Ahlschlager, 212 St. Paul St., Dallas, 7 story, bsmnt., rein.-con. hotel, concrete beam and pier fdn., air-conditioning. $1,600,000. CD 10/13—ENR 10/28.

Tex., Port Arthur—Henke & Pillot, Inc., 304 Milam St., Houston, masonry supermarket, $450,000; remodeling, repairing, expanding supermarket units, $275,000.

●**Tex., Port Lavaca**—Tom De Shazor, Port Lavaca, 75 frame dwellings, on south side $450,000 (late summer); 92 frame dwellings $560,000 (early spring).

●**Tex., San Antonio**—V. F. Buchek & Co., Majestic Bldg., 300 addnl. dwellings, in University Park, $1,500,000.

●**Tex., San Antonio**—E. J. Burke & Sons, Inc., 4220 S. Zarzamora St., addnl. small type housing on South Side, $600,000; 41 eight-unit apartments, N. New Braunfels Ave. between Austin Hy. and WOW Hospital, $800,000.

Tex., San Antonio—L. G. Hodges, 3800 San Pedro Ave., 100 dwellings, $500,000. CD 1/2/47—ENR 1/23/47.

Tex., San Antonio—G. S. McCreless, 1102 Fair St., 75 dwellings, on Southside, $475,000.

the CLECO
A-3 REVERSIBLE PNEUMATIC ROTARY
IMPACT WRENCH

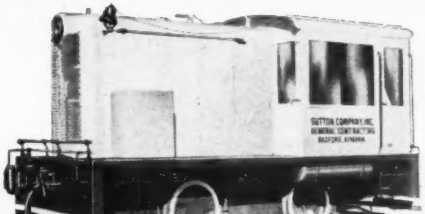
A 4½ POUND HANDFUL OF POWER

This powerful tool:
- Has a capacity of ⅜" bolt size
- Weighs only 4 pounds 8 ounces
- Length overall — 6⅝"
- Spindle offset — ⅞"

And will give:
Powerful impact • Excellent balance • No vibration • Long service life • Reduced maintenance costs • Low air consumption.

CLECO DIVISION
of the REED ROLLER BIT COMPANY
P. O. Box 2119, Houston, Texas, U.S.A.

Where a Project Calls for RAILS



Wisdom calls for DAVENPORTS

DAVENPORT LOCOMOTIVES — Speed and Power The World Over

A Davenport Better-Built Locomotive will give you flexible, always available haulage power for record work accomplishment at lowest ton-mile costs. Whatever the size and type you require, a Davenport will put Profit-Power on your rails.

WE ANALYZE YOUR NEEDS

It will be a pleasure to send you our latest Haulage Survey Data Sheet to enable you to describe your haulage conditions accurately and completely. Our engineers will analyze the data you submit and recommend the power unit that will perform most profitably for you.

Better-Built DAVENPORTS *are AVAILABLE in* STEAM GASOLINE DIESEL with ELECTRIC or MECHANICAL DRIVE

EXPORT OFFICE **BROWN & SITES CO., INCORPORATED**
50 Church St., New York 7 Cable Address "BROSITES"

WRITE US TODAY

DAVENPORT LOCOMOTIVE WORKS
A DIVISION OF DAVENPORT BESLER CORPORATION, DAVENPORT, IOWA
ESTABLISHED IN 1900

How **KOHLER**
Electric Plants
help speed construction at

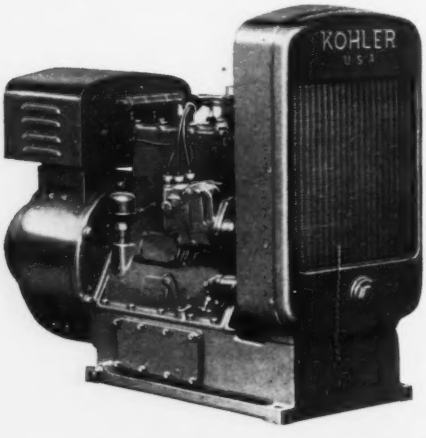
FORT RANDALL DAM

At Fort Randall Dam, South Dakota, where the Western Contracting Corporation is moving about 10 million cubic feet of earth, 1500 watt Kohler Electric Plants, together with floodlights, are mounted on handy 3-wheel trailers for the aid of night crews. This means plenty of light for the working area during night operations, and provides a portable source of power for operating maintenance and repair tools on the job. Whether used for lighting, or to operate motors, pumps and power tools, Kohler Electric Plants have earned an outstanding reputation for ruggedness, reliability, convenience and economy.

For stand-by protection, the importance and reliability of Kohler Electric Plants are also widely established. They are installed in schools, stores, hospitals, theatres, homes, farms and other places to assure continued operation of vital equipment when storms or accidents cause failure of central station electric current.

Kohler Electric Plants are available in sizes from 750 watts to 10 KW, with or without metal housing and skid base for portable outdoor service. Write for illustrated Folder D-2. Kohler Co., Kohler, Wisconsin. Established 1873.

•



Kohler Electric Plant 3A21
3 KW, 115 Volt AC.
Length 41", Width 16"
Height 28"

KOHLER OF KOHLER
PLUMBING FIXTURES • HEATING EQUIPMENT • ELECTRIC PLANTS

●**Tex., San Antonio**—Frank Robertson, Majestic Bldg., 150 dwellings, $900,000; 90 dwellings, $450,000.

Tex., San Antonio—Texas National Hotel Assn., Anico Bldg., Galveston revising plans, 10 story bamnt. 300 room hotel addn., Alamo Plaza, $750,000. Andrew Fraser, 622 American Natl. Bank Bldg., Galveston, engr. CD 5/25—ENR 5/27.

●**Wash., Seattle** — Associated Students, c/o University of Washington, Henry Bldg., student union bldg. $1,250,000.

Ont., London—Queen Alexandre Sanatorium, London, E. V. Buchanan, secy., plans by V. J. Blackwell, 284 Dundas St., London, 3 story, bamnt., 100x250 ft. brick, steel, concrete wing. $500,000.

Ont., Steep Rock — Steep Rock Mines Ltd., C Eaton, chn., 100 houses, Approx. $525,000.

●**Que., Quebec City**—Religious Community, Sisters of the General Hospital, Quebec City, plans by J. Roland Bedard, c/o owner, 450 homes, between Des Commissaires Blvd. and Quebec West. $5,000,000.

INDUSTRIAL BUILDINGS

●**Ark., Ferrest City**—POWER PLANT—Arkansas Power & Light Co., Pine Bluff, plans by Ebasco Services, Inc., 2 Rector St., New York, N. Y., power plant, near here, 2 generators with 132,000 kw. per hr. capacity, $15,000,000.

Colo., Canon City—POWER PLANT—Southern Colorado Power Co., c/o W. N. Clark, Pueblo, 12,000 kw. power plant. $900,000.

Colo., Cripple Creek — MILL — Golden Cycle Corp., c/o A. H. Bebee, vice pres., Cripple Creek, plans by O. W. Walwood, engr. and archt., 401 High St., Denver, gold ore reduction mill at Elkton, midway between Cripple Creek and Victor.

Colo., Rocky Ford—POWER PLANT—Southern Colorado Power Co., c/o W. N. Clark, Rocky Ford, 12,000 kw. power plant. $900,000.

Del., Wilmington — PLANT — News-Journal Co., Orange and Girard Sts., plans by Lockwood & Green Co., 10 Rockefeller Plaza, New York, N. Y., newspaper printing plant addn. $300,000.

Idaho, Boise — PLANT — Downer & Harris Bros. Lumber Co., Barber St., lumber mill and dry kiln plant, $300,000.

Ill., Bedford Park—PLANT—Clark Water Heater Co., div. of McGraw Electric Co., Elgin, 1 story, brick, steel plant, $250,000. Sessions Eng. Co., 1 N. LaSalle St., Chicago, engr.

Ind., Whiting — LABORATORY — Standard Oil Co. of Indiana, 910 S. Michigan Ave., Chicago, Ill., plans by Holabird Root & Burgee, 333 N. Michigan Ave., Chicago, Ill., 1 story, high pressure laboratory addn. to research center group. $150,000.

●**La., Bogalusa**—PLANT—Gaylord Container Corp., Bogalusa, rebuilding No. 4 machine, incl. addns., equipment, $1,000,000. B. B. Pierce, ch. engr.

Minn., Bemidji—GARAGE, etc.—Beltrami Electric Co-operative, E. Larson, mgr., 1 story, 80x120 ft., brick, tile, office, garage, warehouse, $115,000.

●**Minn., Jackson**—PLANT, etc.—Federated Rural Electric Co-operative, Jackson, 3,300 kw. dual-fuel generating plant near here, and 44 mi. rural distr. lines, Jackson Co. $1,068,000. United Eng. Service, 600 Kasota Bldg., Minneapolis, engr. CD 1/14—ENR 1/27.

Mo., Clayton (St. Louis, Zone 5, P. O.)—SALES and SERVICE—Arthur R. Lindburg, Inc., 3556 Lindell Blvd., St. Louis, Zone 3, plans by Hugo K. Graf 2825 Olive St., St. Louis, Zone 3, 1 story, brick, concrete, steel sales and service bldg., Hanley and Carondelet Aves.

●**Mo., Kansas City**—PARTS DEPOT—International Harvester Co., 180 N. Michigan St., parts depot, $8,000,000, incl. equip., land, etc.

●**N. J., Trenton**—INDUSTRIAL DEVELOPMENT—Pennsylvania R.R., J. L. Gressitt, ch. engr., Broad Street Station Bldg., 1617 Pennsylvania Blvd., Phila. 4, Pa., industrial development. Over $2,500,000.

●**N. J., Westville**—REFINERY—Texas Co., River Ave. and Pennsylvania R. R., addnl. refinery and storage facilities. $50,000,000.

●**N. Y., New York**—GARAGE, etc.—515 Seventh Ave. Corp., 1359 Broadway, Zone 18, plans by Kelly & Gruzen, 220 Broadway, Zone 17, garage and store, 515 Seventh Ave. $1,500,000.

N. Y., New York—GARAGE, etc.—Post Office Garage, Inc., 580 Fifth Ave., Zone 19, plans by Oscar I. Silverstone, 153 Pierrepont St., Brooklyn, Zone 2, garage and office, 225-29 E. 43 St. $200,000.

●**N. Y., Niagara Falls**—PLANT—E. I. duPont de Nemours & Co., Niagara Falls, plant for production polyvinyl alcohols. $3,000,000.

Ore., Ontario—SUBSTATION—Idaho Power Co., 1220 Idaho St., Boise, Idaho, 40,000 kva. substation. $800,000.

Pa., Cornopolis—MANUFACTURING—Pittsburgh Forging Co., Coraopolis, 1 story steel mfg. bldg., corrugated metal siding. $100,000.

●**Pa., Marcus Hook**—REFINERY, etc.—Sun Oil Co., 1620 Walnut St., Phila., refinery and storage facilities addns. $20,000,000.

(Continued on page 106)

FOSTER'S

A COMPLETE WAREHOUSE SERVICE SINCE 1902

Write for Folder F-107

RAIL • TRACK ACCESSORIES • PILING • PIPE • WIRE ROPE

TRADE MARK

SINCE 1902

L. B. FOSTER COMPANY

PITTSBURGH 30 • NEW YORK 7 • CHICAGO 4 • HOUSTON 2 • SAN FRANCISCO 4

Five convenient warehouses for prompt delivery

GET TWICE THE LIFE WITH CAINE

CORR-PLATE STEEL PILING!

1. STANDARD

2. INTERLOCKING

Now Caine Corr-Plate Steel can be ordered in a new steel alloy which gives it 100% greater corrosion resistance. This practically doubles the service life of your piling. Tests also prove this new alloy to be 25% stronger, giving you equal strength in a 25% lighter piling.

Caine Corr-Plate Steel Piling can be used over and over again, thus distributing its cost over a great many jobs. It's nestable, easy to drive, and watertight.

The world over, Caine Corr-Plate Steel Piling is being used for Foundations, Dams, Retaining Walls, Docks, Levees, Bulkheads, Sewers, Disposal Plants and hundreds of other jobs.

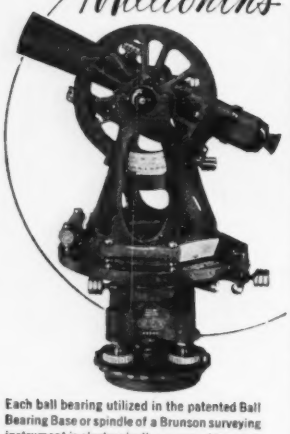
Now, More Than Ever Before... STRONGEST Per Pound Weight

2894

CAINE STEEL COMPANY

Steel Piling Division, 1820 N. Central Avenue, Chicago 39, Illinois

MEASURED TO *Millionths*



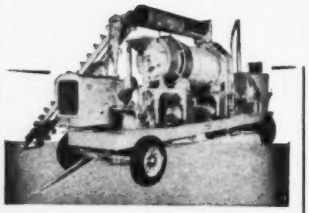
Each ball bearing utilized in the patented Ball Bearing Base or spindle of a Brunson surveying instrument is electronically measured to match within 10-millionths of one inch. Superior construction assures lasting accuracy.

Precision surveying instruments
Transits, Levels, Rods, Tripods.

LASTING BRUNSON ACCURACY

distributed by

CHARLES BRUNING COMPANY, INC.
4754-4 Montrose Ave. • Chicago 41, Ill.



PORTABLE ASPHALT PLANTS

Complete units for pavement maintenance. Capacities—4, 8, 12, 25 tons per hour.

Other Products

CONCRETE VIBRATORS
Gasoline Engine and Electric Motor Driven Models

HEATING KETTLES
for Asphalt and Tar

AGGREGATE DRYERS
for Stone and Sand

FRONT END LOADERS
for Industrial Tractors

WRITE FOR CIRCULARS

White Mfg. Co.

ELKHART INDIANA

(Continued from page 104)

●**Pa., Morrisville** — INDUSTRIAL — Pennsylvania R. R., J. L. Gressitt, ch. engr., Broad Street Station Bldg., 1617 Pennsylvania Blvd., Phila. 4, Pa., industrial development. Over **$2,500,000.**

●**Pa., Phila.**—REFINERY, etc.—Atlantic Refining Co., Atlantic Refining Bldg., addnl. refinery and storage facilities. **$20,000,000.**

●**Pa., Phila.** — REFINERY and STORAGE — Gulf Refining Co., Gulf Bldg., addnl. refinery and storage facilities. **$40,000,000.**

●**Pa., Phila.**—REFINERY, etc.—Sinclair Refining Co., 58 St. and Schuylkill River, refinery and storage facilities addn. **$15,000,000.**

●**Pa., Pittsburgh** — MILL BLDGS. — Jones & Laughlin Steel Corp., 3 and Ross Sts., 1 and 2 story, brick, steel mill bldgs., new soaking pits, 6 open hearth furnaces, imprv. blast furnaces and facilities for finishing cold rolled sheet steel and tin plate, 30 St. to City Line. **$70,000,000.**

●**Pa., Sharon** — STEEL MILL — Sharon Steel Corp., Sharon, 1 story, steel, frame steel mill expans., imprvs. **$4,000,000.**

S. C., Sumter—FACTORY—Manufacturing Enterprises, Inc., B. L. Montague, pres., Sumter, zipper factory. **$100,000.**

●**Tenn., Nashville**—PLANT, etc.—Dr. Frank Feseey, c/o John H. Parmelee, archt., Warner Bldg., mfg. plants and extensive warehouse space. (first unit) 250x600 ft. warehouse. **$750,000** (in spring) Total est. **$10,000,000.**

Tenn., Nashville—SAUSAGE FACTORY—McRedmond Bros., Columbia, sausage factory. **$250,000.**

●**Tex., Daingerfield**—STEEL MILL—Lone Star Steel Co., Daingerfield, and c/o E. B. Germany, Cotton Exchange Bldg., Dallas, steel mill, specialize in production of pipes, tubular products, etc. **$61,000,000.** CD 4/29—ENR 5/13.

Tex., Jonesville—PLANT—Byrd Oil Corp., Tower Petroleum Bldg., Dallas, and Ed Hurley, Atlas Bldg., Shreveport, La., dehydration gas plant ½ mi. east of here. **$750,000.**

Tex., New Braunfels—MILL—Pioneer Worsted Co., c/o Robert E. Pent, New Braunfels, expan. wool scouring and combing mill. **$175,000.**

Tex., Pharr—PACKING SHEDS—Mrs. I. N. Weir & Assoc., Pharr, reconstructing 50x324 ft. tomato packing sheds. **$150,000.** Valley Fruit Co., Pharr, lessee.

Tex., San Antonio — WAREHOUSE — Merchants Biscuit Co., 307 N. Medina St., plans by McCrackin & Hiett, Hutchinson, Kan., 1 story, 100x150 ft., steel, brick, stone or smooth tile warehouse, concrete beam fdn., winter-summer air-conditioning. **$140,000.** Cornell G. Curtis, 6521 Dallas Hy., Austin, assoc. archt.

Que., Montreal—BREWERY—Molsons Brewery Ltd., 1670 E. Notre Dame St., plans by McDougall & Assoc., 1235 McGill College Ave., brewery house addn. **$500,000.** Harper-Ellington & Day, Inc., 1507 Stroh Bldg., Detroit, Mich., U. S. A., engrs.

UNCLASSIFIED

Alabama—RURAL DISTRIBUTION LINES—Cherokee Electric Co-operative, Centre, 60 mi. rural distr. lines, sys. imprvs. completion previously approved construction, Cherokee Co. **$610,000.**

Alabama—RURAL DISTRIBUTION LINES—Franklin Electric Co-operative, Russellville, 154 mi. rural distr. lines, sys. imprvs., two-way radio communication sys. and completing approved construction, Franklin Co. **$576,000.**

●**Alabama**—RURAL DISTRIBUTION LINES—Sand Mountain Electric Co-operative, Fort Payne, 300 mi. rural distr. line, sys. imprvs., headquarters facilities and completion previously approved construction, DeKalb Co. **$1,020,000.**

Arizona—RURAL DISTRIBUTION LINES—Duncan Valley Electric Co-operative, Duncan, 35 mi. rural distr. lines, sys. imprvs. incl. conversion 46 mi. single phase line to three phase to serve 75 irrigation pumps, Greenlee Co. **$320,000.**

●**Arizona**—RURAL DISTRIBUTION LINES—Graham County Electric Co-operative, Pima, 166 mi. rural distr. lines, four 1,000 kw generating units, 12 mi. rural distr. line, sys. imprvs., headquarters facilities and two-way radio communication sys., Graham Co. **$1,320,000.** CD 6/7/46—ENR 6/27/46.

Calif., Pleasanton—FAIRGROUND BLDGS.—Alameda Co., Courthouse, Oakland, plans by Edward D. Cerruti, 427 13 St., Oakland, poultry and livestock exhibit bldgs., etc. at Alameda County Fairgrounds. $120,000.

●**Ill., Chicago** — RACE TRACK — Owner, c/o E. W. Rupinski, archt., 30 N. La Salle St., race track, steel, rein.-con. stand, club house, etc., near here. **$2,500,000.**

Indiana—RURAL DISTRIBUTION LINES—Dubois Rural Electric Co-operative, Jasper, 60 mi. rural distr. lines, Dubois Co. **$140,000.**

Indiana—RURAL DISTRIBUTION LINES—Huntington Co. Rural Electric Membership Corp., Huntington, 8 mi. rural distr. lines, sys. imprvs., headquarters facilities, etc., Huntington Co. **$200,000.**

Iowa—RURAL DISTRIBUTION LINES—D. E. K. Rural Electric Co-operative, Estherville, rural distr. lines, Emmet Co. **$397,000.** Phillip Burns, 630 Davenport Bank Bldg., Davenport, engr.

Iowa—RURAL DISTRIBUTION LINES—Hawkeye Tri-County Electric Co-operative, Cresco, rural distr. lines, sys. imprvs., Howard Co. **$675,000.** P. L. Burns 630 Davenport Bank Bldg., Davenport, engr. CD 1/3/47—ENR 1/23/47.

Ia., Clinton — DRIVE-IN THEATRE — A-Muse-U Corp., c/o P. D. Alleman, vice pres., Clinton, drive-in theatre. **$100,000.**

Ia., Grundy Center—DRIVE-IN THEATER—Pioneer Theater Corp., Harold D. Field, pres., 4928 Minnetonka Blvd., St. Louis Park, Minn., plans by Liebenberg & Kaplan, 51 S. 13 Ave., Minneapolis, Minn., drive-in theater, etc. Approx. **$100,000.**

Louisiana—RURAL DISTRIBUTION LINES—Louisiana Rural Electric Corp., Alexandria, 247 mi. rural distr. line, Rapides Parish. **$307,-000.**

Louisiana—RURAL DISTRIBUTION LINES—Washington St. Tammany Electric Co-operative, Franklinton, sys. imprvs., communication sys., Washington Parish, **$380,000.** Frank Horton & Co., Lamar, Mo., engrs. CD 12/26/46—ENR 1/9/47.

La., Simmesport—NATURAL GAS SYSTEM—City, City Hall, voted **$165,000** bonds, natural gas sys. CD 12/13—ENR 12/23.

●**Mass., Boston**—PIERS—Port of Boston Authority, Commonwealth Pier 5, South Boston, Mystic Terminal, pier facilities, site of Piers 46 and 47, Charlestown. **$6,000,000.** Thomas Worcester, Inc., 84 State St., engr. CD 4/17/44—ENR 5/4/44.

Mass., Lynn — SPORTS CENTER — Sports Center, Inc., Lars Anderson, pres., 70 Washington St., Lynn, 143x262 ft., rein.-con., wood, cement sports arena, 70 Washington St. **$250,000.** Hollis French, 210 South St., Boston, engr. CD 10/6—ENR 10/23.

Minnesota—RURAL DISTRIBUTION LINES—North Itasca Electric Co-operative, M. Neseth, pres., rural distr. lines, sys. imprvs., sub-Counties, **$455,000.** Banister Eng. Co., 1954 Unistations, Itasca, Beltrami and Koochiching Counties, **$455,000.** Bannister Eng. Co., 1954 University Ave., St. Paul, engr.

Mississippi—RURAL DISTRIBUTION LINES—Tallahatchie Valley Electric Power Assn., Batesville, 293 mi. rural distr. line, sys. imprvs., Panola Co. **$550,000.**

Miss., Greenville—SWIMMING POOL—City, City Hall, swimming pool. **$100,000.** Frank Hall, city engr.

Nebraska—RURAL DISTRIBUTION LINES—KBR Electric Membership Corp., Ainsworth, rural distr. lines, and imprv. previously approved constr., Brown Co. **$605,000.** Raymond H. Reed & Co., Columbus, consult. engrs.

North Dakota—RURAL DISTRIBUTION LINES—Williams Electric Co-operative, Williston, rural distr. lines, Williams Co. **$950,000.** Ulteig Eng. Corp., Fargo, consult. engrs. CD 2/4/48—ENR 2/19/48.

Oklahoma—RURAL DISTRIBUTION LINES—Alfalfa Electric Co-operative, Cherokee, 277 mi. rural distr. lines, sys. imprvs., 78 mi. new tie lines, 2 way radio communication sys., completing previously approved constr., Alfalfa Co. **$740,000.** CD 11/12/47—ENR 11/27/47.

Oklahoma—RURAL DISTRIBUTION LINES—Caddo Electric Co-operative, Binger, 314 mi. rural distr. sys., sys. imprvs., 16 mi. tie lines, headquarters facilities and two-way radio communication sys., Caddo Co. **$635,000.** CD 9/20/46—ENR 10/3/46.

Oklahoma—RURAL DISTRIBUTION LINES—Indian Electric Co-operative, Cleveland, rural distr. lines, Pawnee Co. **$835,000.**

●**South Carolina**—RURAL DISTRIBUTION LINES—Central Electric Power Co-operative, Columbia, 834 mi. rural distr. lines, delivering power from Santee Cooper Dam at Moncks Corner, to 14 distr. sys., Berkeley Co., etc. **$7,595,500.**

S. D., Vermillion—STADIUM—University of South Dakota, Vermillion, stadium at athletic field. **$100,000.**

Texas—RURAL DISTRIBUTION LINES—Denton County Electric Co-operative, Denton, rural distr. lines, Denton Co. **$200,000.**

Texas—RURAL DISTRIBUTION LINES—Fayette Electric Co-operative, La Grange, rural distr. lines, Fayette Co. **$383,000.**

●**Texas**—CRUDE OIL PIPELINE—Humble Oil & Refining Co., 1216 Main St., Houston, 400 mi. 16 or 18 in. welded joint crude oil pipeline carrier between Big Lake and Baytown. **$7,200,-000.**

Texas—RURAL DISTRIBUTION LINES—Jackson Electric Co-operative, La Ward, rural distr. lines, Jackson Co. **$150,000.**

Tex., Houston—ZOO—City, M. H. Westerman, secy., plans by Thomas E. Graecen II, 1010 Winbern St., elephant island, separation of animals by moats, **$120,000;** monkey island, incl. stone, concrete, glass house, several water pools, dry moats, etc., **$450,000.** CD 7/6/44—ENR 7/27/44.

Tex., Mission — STADIUM — Mission Independent School Dist., Mission, plans by R. C. Rippstein, 2302 Transit Tower San Antonio, stadium-gymnasium. **$100,000.** CD 10/2/47—ENR 10/16/47.

Wyoming—RURAL DISTRIBUTION LINES—Lower Valley Power & Light, Freedom, 7 mi. rural distr. lines and completing previously approved constr. Lincoln Co. and 1,000 kw. hydro plant on Strawberry Creek, near Freedom. **$365,000.** CD 11/1/46—ENR 11/14/46.

●**Alta., Calgary** — DAM, etc. — Calgary Power Ltd., H. B. Sherman, vice pres., Calgary, dam and hydro-electric plant, Bow River, Bearspaw, 3 mi. west of Keith Sanitorium. Approx. **$2,-000,000-$3,000,000.**

WANTED
CONCRETE CONTRACTORS

The Biggest MONEY-MAKING Proposition of 1949

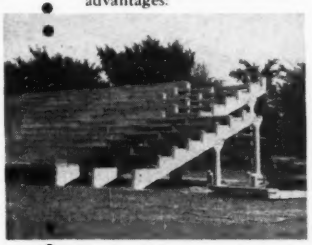
SELL AND BUILD BLAIR

CASTADIA*

(*CASTADIA—Pre-cast Concrete Stadia, Bleachers or Stands)

There has been a steadily increasing demand for BLAIR CASTADIA from municipalities, small colleges and schools who cannot afford a monolithic stand. The Blair Company, who has fabricated and erected these pre-cast concrete stadia for several years, has found CASTADIA the perfect answer for outdoor seating of less than 10,000 persons.

Since the Blair Organization desires only to sell and build BLAIR CASTADIA within a four-state area, it has been decided to let a few other contractors into this profitable business. These contractors — over the country — will be selected to own and operate BLAIR CASTADIA Franchises in their territories. The Franchise cost is small compared to the profits realized. BLAIR CASTADIA offers contractors the following advantages:



1. Building costs approximately 50% of monolithic stand.
2. Rigid steel forms used eliminate carpenter labor. 95% of work can be done by unskilled labor.
3. All work — except footings — is pre-cast. Assembled with light automotive crane. Low equipment investment.
4. Easy and quick to cast and assemble. Big profits.
5. Steady flow of contracts. Each completed job sells others. Absolutely no competition.

Perhaps your organization can qualify for one of these profitable BLAIR CASTADIA Franchises. Write for Literature, at once.

P. F. BLAIR & SON

5540 EAST ARCHER ST. PHONE 6-4157 TULSA, OKLA.

*BLAIR CASTADIA Construction System Patented-Trade Name Copyrighted.

High Grade Hardwood

SURVEYOR STAKES

Stained Yellow Bound with Steel Strapping

	Per 100	In 1000 lots Per 100
1x2—12"	$5.05	$4.80
1x2—15"	5.15	4.65
1x2—18"	5.25	4.75
1x2—21"	6.20	5.65
1x2—36"	8.80	8.00
2x2—12"	8.50	6.90
2x2—15"	8.15	7.00
2x2—18"	8.70	7.90
2x2—24"	10.45	9.50
2x2—36"	15.00	13.65

Prices net F.O.B. Cumberland, Md.

BUCHANAN LUMBER CO.
CUMBERLAND, MD.

Diamond Core

Drilling

CORE BORINGS for Foundations, Dams, Bridges and all Heavy Structures
GROUT HOLES

Tinney Drilling Co.
Grafton, W. Va.

POWER

You can't beat EXIDE BATTERIES for dependable Diesel cranking

For peak performance, use Exide Diesel Cranking Batteries! They're built specially for the job . . . with mighty power to handle the toughest cranking . . . with extra ruggedness for hard service in all climates . . . and in types and sizes for on and off the highway automotive equipment of every kind.

Manufacturers, owners and operators of Diesel powered trucks, tractors, and earth-moving units can always count on Exide Batteries for dependable performance, long battery life and low cost maintenance.

Exide
BATTERIES

1888 . . . Dependable Batteries for 61 Years . . . 1949

"Exide" *Reg. Trade-Mark U. S. Pat. Off.*

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32 • *Exide Batteries of Canada, Limited, Toronto*

CONSTRUCTION REPORTS

Bids—Contracts—First Section

WATER SUPPLY

BIDS ASKED

About February 25

O., Loudonville—Village, lime-soda water purification plant. $130,000. CD 8/21/47—ENR 9/4/47.

LOW BIDDERS

Ore., Roseburg—Roberts Creek Water Dist., Route 1, Box 275, rejected bids Jan. 3, water supply sys., L. B. sans pipe $110,250, with pipe L. B. $140,640. CD 1/11—ENR 1/13, under LB.

Pa., Phila.—Dpt. P. Wks., City Hall Annex, sewers various locations, Schedule B-1, from A. Di Sandro, 937 Unruh St., $50,850; Schedule B-2, from A. De Sabato, 1235 Porter St., $51,-223. A. Zane Hoffman, c/o owner, ch. engr. CD 1/31/48—ENR 2/22/45.

Tex., Dallas—City, Earl Goforth, secy., Jan. 18, 42 and 36 in. c. i. watermains from Bachmann Pump Station to Washington Ave. and Central Sect., Contrs. 1 and 2, from W. G. Cullum & Co., Gr. Natl. Life Bldg., and Cole Williams Co., Route 7, Box 420-A, $84,262 and $95,670 respectively***Contr. 3, from City Constr. Co., 2411 Inwood Rd., $66,991***20 in. c. i. watermains Haskell St. Contr. 232, from E. L. Dalton, P. O. Box 7125, $59,000. CD 12/1—ENR 12/23.

Tex., Perryton — City, R. A. Boierjack, mayor, Jan. 18, WW sys. extens., imprvs., incl. 250,000 gal. concrete reservoir, Part A, from S. E. Lanier, Perryton, $139,260. Est. $70,000. CD 1/4.

CONTRACTS AWARDED

Del., Smyrna—Town, water treatment plant, to Pleasonton & Egdell, Inc., Dover, $28,000. Bids 1/14. CD 12/23—ENR 1/6.

Tex., Houston — City, M. H. Westerman, secy., Wells 4 and 5, and Wells 9 and 10, to Texas Water Wells, Inc., 951 McCarty St., $191,730. Bids 1/12. CD 1/19—ENR 1/27, under LB.

Tex., McAllen—City, 500,000 gal. elevated steel storage tank, to Pittsburgh-Des Moines Steel Co., Praetorian Bldg., Dallas, $78,000; c. i. pipelines, force account, $175,000. CD 11/10/47.

SEWERS, WASTE DISPOSAL

BIDS ASKED

February 15

Wis., Turtle Lake—Village, sewers, sewage treatment plant. $149,000. P. C. Bettenburg & Co., 1437 Marshall Ave., St. Paul, Minn., engrs. CD 2/12/48—ENR 4/4/46.

February 16

Calif., Rockaway Beach — Ocean Shore Sanitary Dist., Rockaway Beach, Ocean Shore Sewerage Sys. incl. sewers, treatment plant and outfall sewer, Res. No. 9. Over $50,000. Plans deposit $10. Wilsey & Co., Inc., 1126 Broadway, Burlingame, engr.

February 23

Ala., Mobile — State Dept. Docks & Terminals, c/o J. P. Ewin, Inc., engr., P.O. Box 361, Mobile. Zone 3, concrete culvert for an intercepting sewer in Water St. from Congress to Beauregard Sts., and Beauregard St. from Water St. and to Mobile River. Plans deposit $25.

LOW BIDDERS

Pa., Phila. — Dpt. P. Wks., City Hall Annex, intercepting sewer, Pennypack Creek, SD 130 NE. from James D. Morrissey, Inc., 9119 Frankford Ave., $177,981. A Zane Hoffman, c/o owner, ch. engr. CD 11/24/44—ENR 12/14/44.

Tex., Perryton — City, Jan. 18, sanitary sewerage sys. extens., imprvs., from Sherman Machine & Iron Wks., 26 E. Main St., Oklahoma City, Okla. $59,018. Est. $35,000. CD 1/4.

CONTRACTS AWARDED

Ill., Bradley — Village, sewage treatment plant, WW sys. imprvs., to Gordon Hamilton Constr. Co., 201 N. Wells St., Chicago. Est. $306,585. Bids 12/20. Edwin Hancock Eng. Co., 1509 W. Jackson St., engrs. CD 12/3—ENR 12/29

BRIDGES

BIDS ASKED

February 11

Kentucky—State Hy. Dpt., Frankfort,

Breckinridge Co.—steel superstructure and concrete flooring for bridge, Union Star Stephenaport Rd., S. 89 (2)-2, SP 14-193, at Stephenaport.

Metcalfe Co.—bridge, 0.359 mi. approaches, Cave City-Sulphur Well Rd., S. 250 (5), SP 56-104, at Sulphur Well.

Owsley Co.—concrete flooring, bridge, Booneville-Sebastian Rd., S. 138 (1)-2, SP 95-76, at Booneville.

February 15

Texas—State Hy. Comn., Austin,

El Paso Co.—Cotton Avenue Overpass, approaches on Hy. US 54, Proj. F.G. 784 (5), in El Paso, $290,000.

Roberston Co.—Little Brazos River Bridge, approaches, Hy. US 79, F. 400 (3), $147,000. CD 3/11/43—ENR 3/18/43.

February 16

Texas—State Hy. Comn., Austin,

Milam Co.—Elm and Walker Creek bridges, approaches, Hy. US 77, Proj. F. 191 (13), $187,000. CD 3/11/43—ENR 3/18/43.

LOW BIDDERS

†Arizona and Nevada—Bureau Reclamation, Dpt. Interior, Davis Dam, Nev., Jan. 20, furnishing, erecting structural steel for highway bridge across forebay channel at Davis Dam, Davis Dam Proj., Spec. 2506, from J. H. Pomeroy & Co., 333 Montgomery St., San Francisco, Calif., $265,300. CD 12/22—ENR 12/30.

†Kansas—U. S. Eng., 601 Davidson Bldg., Kansas City, Zone 8, Mo., Jan. 11, raising Kansas City Southern Railway Bridge at Kansas City, Kan., Serial No. Eng. 23-028-49-125, from Sebastian B. Albergo & Sons, 1033 S. Peoria St., Chicago, Ill., $189,875. Est. $172,800. CD 12/15—ENR 12/25.

Pa., Phila.—Dpt. P. Wks., City Hall Annex, Jan. 19, Contr. B-106, Walnut Lane Bridge, from Corbetta Constr. Co., 220 E. 42 St., New York, N. Y. $652,000. CD 12/2—ENR 12/9.

Tex., El Paso—City, Jan. 13, Contr. X, superstructure, southeast wing wall and approaches to Campbell Street Bridge from Western Constructors, Inc., El Paso, $153,692, est. $100,000; Contr. 3, bridge approaches, incl. wall cap, pump house, drainage sys., etc. at Mesa Ave., Santa Fe, El Paso, Oregon, Stanton and Kansas Sts., from Vowell Constr. Co., Upper Valley, El Paso, $95,586. CD 12/21—ENR 12/23.

STREETS AND ROADS

BIDS ASKED

February 10

Michigan—State Hy. Dpt., Lansing,

Cheboygan Co.—b. conc. 0.515 mi. U. S. 27, FI 16-12 C-3.

c. conc. 1.572 mi. U. S. 27, relocation south of Topinabee, F 16-12 C-3.

Jackson Co.—c. conc. 4.543 mi. U. S. 12 from Cooper St. east to present U. S. 12, Jackson Northbelt, UF1 38-48 C-2.

Missaukee Co.—stab. aggreg. surf. 2.601 mi. M 66 from turn east of McBain, west to McBain east limits, M 57-16, C-3.

base repair, M 66 from McBain, north limits, N XX 57-11, C-3. Plans deposit $3 each. M. H. Frimodig, state hy. engr.

February 11

Christian and Hopkins Counties, Kentucky—Dpt. Hys., Frankfort, traffic bound 3.647 mi Hopkinsville-Dawson Springs Rd., beginning at south Reservation line of Outwood Hospital and exten. to and across Tradewater River, S 277 (4) S P (24-285) (54-260).

Knott Co.—traffic bound 2.818 mi. Cody-Kite Rd., beginning at mouth of Betty Troublesome Creek, approx. 3 mi. north of Cody and exten. toward Kite, S 140 (1), SP 60-138.

Mason Co.—traffic bound 2.061 mi. Maysville-Brooksville Rd., beginning at Moranburg and exten. to approx. ¼ mi. west Maysville, S 87 (2), SP 81-235.

February 15

Texas—State Hy. Comn., Austin,

Chambers Co.—base and double asph. 4.24 mi. FM 563 V 1023-1-3, $76,450.

Collin Co.—stabilized fdn. course, single asph. 7.61 Hy. FM 543, Proj. S-920 (3), $85,000.

Dallas Co.—c. conc. 0.2913 mi. Hy. U. S. 75, C-92-11 $280,000.

Dallas and Kaufman Counties—c. conc. 6.675 mi Hy U. S. 175, F. 869 (6) and F 136 (7), $756,000.

Deaf Smith, Oldham, Hartley, Gray, Donley, Hemphill and Dallas Counties—seal coat 79.25 mi Hys 1 S 87, 54, 84, 152, 170 and FM 691 and 695, Proj. C-168-7-9, etc., $87,000

Ellis Co.—stabilization fdn. course, single asph. 8.121 mi Hy. FM 662, Proj. S. 1119 (1), $110,000

Hamilton and Bosque Counties—flexible base, double asph. 17.862 mi. Hy. St. 22, Proj F 651 (5) and (6), $216,000.

Live Oak Co.—flexible base, asph. 10.499 mi. Hy 1 S 281, F. 166 (5), $112,000. CD 7/30/42—ENR 8/6/42

February 16

● **Texas**—State Hy. Comn., Austin.

Angelina Co.—flexible base, single asph., c. conc. 9.036 mi. Hy. U. S. 69 and FM 841, Proj. S 277 (6), $415,000.

Bee Co.—base and asph. 212.64 mi. U. S. Hy. 59, Proj. F 581 (9), Contr. 2, $195,000.

LEUPOLD
Engineered
PRECISION
HAND LEVEL

L&S INSTRUMENTS

The Leupold Hand Level is designed and precision built for a lifetime of service. Only the Leupold Hand Level has all these features:

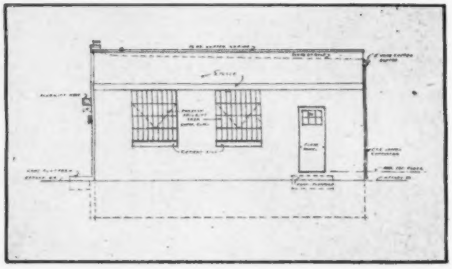
- Permanent bubble magnification adjustment.
- Sealed at both ends against dust and moisture.
- Streamline design.
- Baked enamel finish with gun metal trim.
- 3¼" long x ¾" dia.
- Price includes heavy saddle leather case.

Price **$10.50**

Write for descriptive literature.

LEUPOLD & STEVENS INSTRUMENTS
4445 N. E. Glisan Street, Portland 13, Oregon

with CONCRETE
— the small extra first cost of test samples pays off in assurance of efficiency and durability of the finished structure.



with TRACING CLOTH . . .

The small extra first cost of Arkwright Tracing Cloth, over that of tracing paper, repays many times over in the efficiency and durability of valuable drawings.

Arkwright gives both immediate *and* future advantages. The expert work of the draftsman is made permanent. Your investment in time and money is backed by sharp, clean reproductive quality. Under repeated use — or on file for subsequent need — Arkwright assures perfect drawing performance year after year.

For every drawing worth keeping for future use — use permanent Arkwright instead of perishable tracing paper. Send now for generous samples and prove this superiority. Sold by leading drawing material dealers everywhere. Arkwright Finishing Company, Providence, R. I.

The Big Six Reasons Why Arkwright Tracing Cloths Excel

1. Erasures re-ink without feathering.
2. Prints are always sharp and clean.
3. Tracings never discolor or go brittle.
4. No surface oils, soaps or waxes to dry out
5. No pinholes or thick threads.
6. Mechanical processing creates permanent transparency.

ARKWRIGHT
TRACING CLOTHS
AMERICA'S STANDARD FOR OVER 25 YEARS

Dallas Co.—c. conc. and storm sewers 1.498 mi. Hy. U. S. 67 and 80, Proj. FI 826 (3). $665,000.

Gray Co.—flexible base, single asph. 5.962 mi. Hy. FM 749 and 750, Proj. V. 310-4-1 and V. 169-10-1.

Harrison Co.—flexible base, seal coat 9.078 mi. Hy. FM 134 and 451, Proj. S. 371 (1) and S. 842 (1). $113,000.

Navarro and Freestone Counties—soil asph. base, single asph. 11.42 mi. Hy. FM 639, F. 642 and FM 246, Proj. S. 571 (2), S. 572 (3). $102,000.

Nueces Co.—b. conc. 19.226 mi. Hy. U. S. 77, Proj. C. 102-2-11 and C. 1023-3.

Panola and Rusk Counties—grading, structures 8.493 mi. Martins and Hogans Creek Bridges on Hy. 149 and Spur, Proj. F. 650 (7) and (8). C-392-4-1, $360,000.

Rains Co.—flexible base, single asph. 6.056 mi. Hy. St. 19, Proj. S 204 (3). $132,000. CD 7/30/43—ENR 8/5/43.

LOW BIDDERS

Maryland—State Hy. Dpt., Baltimore, Jan. 18, relocating 3.859 mi. State Rt. 404, bypassing Queen Anne-Hillsboro beginning 1 mi. west of Queen Anne and exten. southeasterly toward Denton, Proj. Q 224-1-215 Co. 173-1-215, Queen Anne and Caroline Counties, from George & Lynch, Inc., 18 and Broone Sts., Wilmington, Del., **$535,430.** CD 1/4—ENR 1/13.

Missouri—State Hy. Dpt., Jefferson City, Jan. 21, from Porter-DeWitt Constr. Co., Poplar Bluff, sand asph. mat. surf. 16.351 mi. Div. 10, Group 2, 4 sects. various routes, Dunklin, Mississippi and New Madrid Counties, **$59,888*****from Land Constr. Co. & C. H. Atkinson Paving Co., 1207 S. 4 St., St. Joseph, roll stone, asph. course wid'n. 4.044 mi. from Chillicothe southwest toward Mooresville, $87,851; 3.814 mi. Rt. 36 Sect. 21 from Chillicothe southwest toward Mooresville, **$87,750,** both Livingston Co.***from Midwest Precote Co., 7600 E. 17 St., Kansas City, roll stone base c. conc. wid'n. 4.88 mi. Rt. 36, Sect. 13A from DeKalb Co. line east to Hamilton, **$104,242;** 4.964 mi. Rt. 36, Sect. 12A from DeKalb Co. line east to Hamilton, **$105,880;** both Caldwell Co., 4.648 mi. Rt. 50, Sect. 2A, from near Lees Summit east towards Lone Jack, Jackson Co., **$86,594*****from St. Joseph Fuel Oil & Mfg. Co., 1207 S. 4 St., St. Joseph, oil aggregate surf. 67.123 mi. Div. 5, Group 1, 13 sectse. various routes, Boone, Callaway, Cole, Cooper, Moniteau and Montgomery Counties, **$64,177*****from W. J. Menefee Constr. Co., Sedalia, oil aggregate surf. 50.095 mi. Div. 10, Group 1, 15 Sects. various routes, Bollinger, Butler, Mississippi, New Madrid, Pemiscot, Ripley, Stoddard and Wayne Counties, **$55,917.** CD 1/11—ENR 1/13.

N. D., Edgeley—City, Jan. 6, paving, from Noel Constr. Co., Jamestown, **$142,000.** L. Richmond, 901 N. 6 St., Grand Forks, engr.

Ore., Portland—Multnomah Co., Courthouse, Jan. 20, grading, paving Multnomah Blvd. Hy., from Edlefsen-Weygandt, 9233 N. Calvert St., **$81,616.** CD 1/12.

Pennsylvania — Pennsylvania Turnpike Comn., Harrisburg, Jan. 24, grading, drainage structures 4.21 mi. Turnpike Sect. 23B, part of Philadelphia Exten., from 0.21 mi. southeast of juncture of TR 341 and Twp. Rd. 566, easterly to point near Dauphin-Lebanon Co. line, Dauphin and Lebanon Counties, from H. J. Williams Co., York, **$938,570.** CD 1/6—ENR 1/13.

Tex., Houston—City, M. H. Westerman, secy., City Hall, asph. Danville St., from Brown & Root, Inc., Box 3, **$49,755.** CD 11/22/44—ENR 12/14/44.

Vermont—State Hy. Dpt., Montpelier, Jan. 21, grading, drainage, paving 2.878 mi. Route 100, Proj. Lowell F 79 (9), from George & Vredenburgh, Montpelier, **$210,291.**

CONTRACTS AWARDED

Ga., Eatonton—City, paving 7.15 mi. streets, to Coffee Constr. Co., Eastman, **$50,425.** Bids 1/18.

EARTHWORK, WATERWAYS

BIDS ASKED

February 10

●**Pennsylvania**—Dpt. Forests & Waters, 462 S. Office Bldg., Harrisburg, flood control and recreation dam on Little Pine Creek, 25 mi. north of Williamsport, Lycoming Co. $2,500,000. Plans deposit $25. Gannett, Fleming, Corddry & Carpenter, 600 N. 2 St., Harrisburg, engrs. CD 1/5—ENR 1/13, under LB.

February 23

†**Montana**—U. S. Eng., Fort Peck, furnishing, del., f.o.b. cars Wiota 1 hoist car for operation at Spillway Structure, Fort Peck Dam, Fort Peck, Serial No. Eng. 24-016-49-43. Extended date. CD 12/27—ENR 1/6.

February 24

†**Pennsylvania**—U. S. Eng., P. O. Box 1715, Baltimore 3, Md., Williamsport Flood Protection Proj., Levee Unit 2B, at Williamsport, Serial No. Eng-18-020-49-53. Extended date. CD 1/4—ENR 1/27.

March 8

●**South Dakota**—U. S. Eng., 1709 Jackson St., Omaha, Neb., turbines for Fort Randall Dam, Inv. No. Eng. 25-066-49-173. $2,000,000-$4,000,000. Extended date. CD 1/13—ENR 1/20.

AIRPORTS AND AIRBASES

BIDS ASKED

February 21

N. D., Valley City — AIRPORT — City, municipal airport imprvs., incl. admin. bldg., sewage disposal sys., sewer lines, well, pump house and pum. equip., misc. smaller items. $50,000. Dakota Eng. & Constr. Co., Valley City, engr.

On or About March 8

†Minn., Duluth — HANGAR, etc. — U. S. Eng., 1709 Jackson St., Omaha, 2, Neb., hangar and heating plant, Air National Guard Facilities, Duluth Municipal Airport, Serial No. Eng. 25-066-49-176. CD 3/17—ENR 4/1.

March 15

Colo., Grand Junction — AIRPORT BLDG. — City, Tom I. Moore, mgr., 1 story, brick, steel and glass air terminal bldg. $70,000. Smith, Hegner & Moore, 504 First National Bank Bldg. archts. CD 7/23—ENR 8/5.

LOW BIDDERS

N. D., Williston — AIRPORT — City, Jan. 11, municipal airport, from Albert Lalonde, Sidney, Mont., $149,980. P. J. Hays, Williston, engr. CD 12/22—ENR 12/30.

CONTRACTS AWARDED

Fla., Miami — AIRPORT FACILITIES — Miami International Airport Authority, Miami, continued expansion airport facilities. Owner builds. $162,500.

LATIN AMERICA

Mexico, Suchiate — Mexican Govt., Secrita. de R.H., Balderas, 94, Mexico, D.F., receiving bids February 21, completing 18 kilometers grading and structures of principal canal Suchiate River Irrigation Dist. Plans deposit $14.55. J. Vicente Orozco, ch. irrigation engr.

PUBLIC BUILDINGS

BIDS ASKED

February 7

†N. J., Dover—Pub. Wks. Office, Third Naval Dist., Hudson Terminal Bldg., 50 Church St., New York 7, N. Y., installing central heating plant, incl. coal-fired boiler of 6,950 sq. ft., installed radiation (F.D.P.) single retort (underfeed type) stoker vacuum pump, 12 unit heaters, piping, insulation and electrical work, etc. at Test Area 1, Naval Ammunition Depot, Lake Denmark, Spec. 21538. Plans deposit $10.

February 8

D. C., Wash.—Dist. Comrs., District Bldg., Wash., to Stuart Junior High School, alterations, repairs.

S. C., Columbia—City, school, Comn. No. 704. Plans deposit $25. James B. Urquhart, Palmetto Bldg., archt.

February 10

†Washington — Bonneville Power Admin., 729 N. E. Oregon St., Portland, Ore., constructing Mason substation and Mason line terminal at Shelton substation, Inv. 4477. Plans deposit $25.

February 14

Minn., Rochester—City, F. R. Finch, clk., 2 story, L-shaped, brick public health center, $250,000. Plans deposit $25. Ellerbe & Co., E. 505 First National Bank Bldg., St. Paul, archts. CD 9/2—ENR 9/16.

O., Cincinnati—Bd. Educ., at office clerk, Administration Bldg., 216 E. 9 St., Riverside-Harrison School, 3232 River Rd. Plans deposit $25. R. W. Shafer, 511 W. Court St., Zone 3, bus. mgr. CD 11/12.

About February 15

†N. M., Albuquerque—U. S. Eng., P. O. Box 1638, addnl. barracks group, utilities, Troop Housing Group II, EOP 815, Serial No. Eng. 29-005-49-43. Plans deposit $25.

O., Youngstown—Bd. Educ., State and Wilson Sts., Elm St. School. Arsene Rousseau, Mahoning Bank Bldg., archt. CD 1/29/47—ENR 2/20/47.

February 15

†Louisiana and Mississippi—U. S. Eng., P. O. Box 1169, Mobile, 7, Ala., office at Lock 3 Pearl River, Serial No. Eng. 01-076-49-34.

February 18

Tex., Woodville—Tyler Co., Lou Cruse, judge, hospital. $225,000-$250,000. Extended date. Consolidated Architects & Engineers, 1010 Fort Worth Natl. Bank Bldg., Fort Worth, engrs. and archts. CD 1/12—ENR 1/20.

February 21

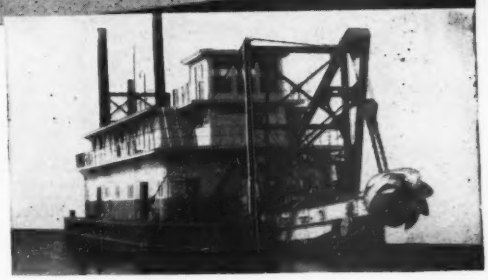
Ill., Kankakee—Bd. Educ., Kankakee, 2 story, brick, steel East Junior High School; 2 story, brick, concrete, steel, stone West Junior High School. Childs & Smith, 20 N. Wacker Dr., Chicago, archts. CD 1/7—ENR 1/13.

O., Kent—Bd. Educ., Edith Merrell, clk., Brady Lake School Dist., R. D. 1, Brady Lake School addn., alterations. Plans deposit $25. Kling & Frost, 661 Wick Ave., Youngstown, archts. CD 8/29/47—ENR 9/4/47.

Tex., Ganado—City and Jackson Co., M. L. Cobb, judge, Ganado, 30-bed masonry Memorial Hospital, concrete pier and beam fdn. $316,000. C. H. Page & Son, 305 W. 11 St., Austin, archts. CD 2/13/48—ENR 2/26/48.

(Continued on page 113)

SLASH YOUR DREDGING COSTS with ELLICOTT HYDRAULIC DREDGES



● Ellicott is the only organization with the experience and equipment to build any size dredge from 6 to 30 inches. Shown is a 16-inch, deep channel Diesel-powered Dredge.

WHATEVER your requirements, whether dredging a river channel, filling a swamp, or producing sand and gravel, your cost per cubic yard of material goes way down with an Ellicott Hydraulic Dredge.

That's because each Ellicott Dredge, from 6-inch to 30-inch machines, is designed to meet your needs. It has the right cutting head for material to be worked, the proper pump for length of the line to the disposal area—completely engineered from stem to stern to operate at the lowest cost.

Ellicott has built hydraulic dredges since 1885 and is the only organization in the world devoted exclusively to hydraulic dredge construction. When you specify Ellicott you get operating economy, because all dredge components are designed, built and delivered by Ellicott—all under one contract!

No matter if you wish to assemble your dredge from Ellicott components and plans, or want the dredge delivered complete, Ellicott is prepared to submit estimates without obligation. Write today for full information on Ellicott Dredges.

● COMPLETE LINE from 6 to 30 inch equipment for all dredging requirements.

● 63 YEARS OF EXPERIENCE with hydraulic dredges.

● UNDIVIDED RESPONSIBILITY—Designed, built, delivered under one Ellicott contract.

● PROVED PERFORMANCE in the U. S. A. and abroad.

HYDRAULIC DREDGES

any type—any size—any service

ELLICOTT MACHINE CORPORATION

1603 Bush Street, Baltimore, Maryland, U. S. A.

MacArthur

39 YEARS INSTALLING PILES OF EVERY TYPE

CAST-IN-PLACE CONCRETE COMPOSITE

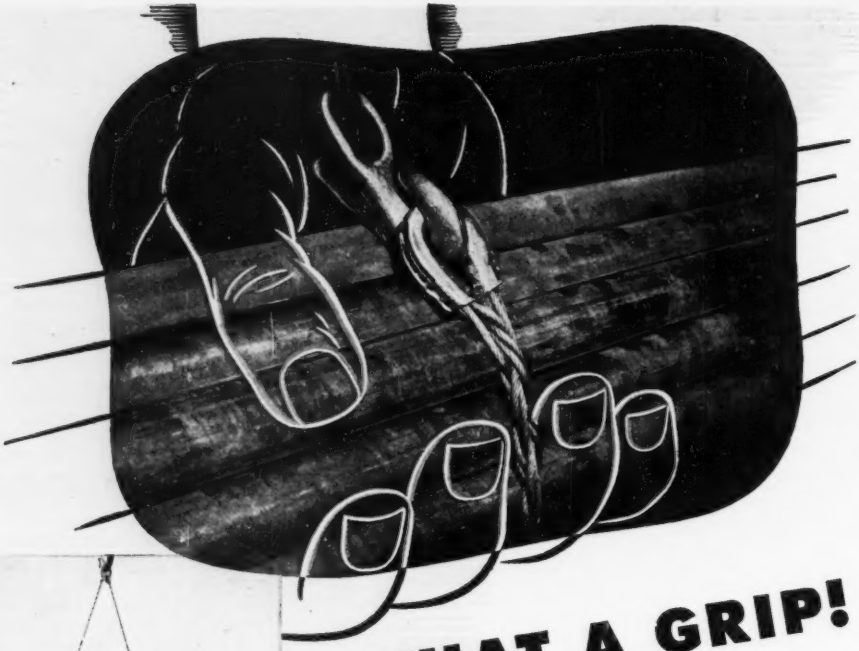
STEEL SECTIONAL PIPE TIMBER

SOIL AND ROCK BORINGS

MacARTHUR CONCRETE PILE CORPORATION

18 EAST 48th STREET, NEW YORK 17, N. Y.

BOSTON • CINCINNATI • NEW ORLEANS



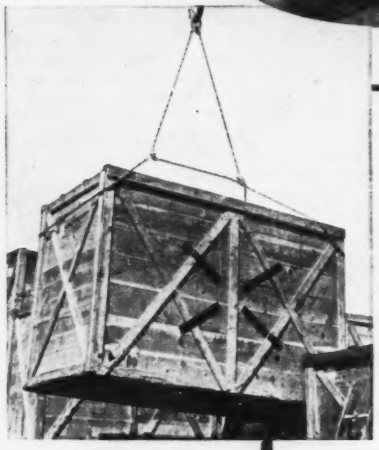
WHAT A GRIP!

Handle loads safely . . . economically with YELLOW STRAND *BRAIDED* SLINGS*

A lot of industries have taken a fresh hold on the sling question as a result of war production. And what a grip they get by using the adaptable Yellow Strand *Braided* Safety Sling! After handling just about every extreme in lifts — from multi-ton ship sections, tanks and guns to light-weight parts, jigs and crates — this improved type of sling is today primed to speed *your* assembly line, shop or field operations.

Tough Yellow Strand Wire Rope provides the sling's strength. The patented *braiding* adds flexibility, kink-resistance and a snug grasp on odd-shaped, rounded or slippery objects. The combined result is a time-and-labor-saving sling with less weight and bulk than chain of like capacity . . . with limberness well suited to former Manila rope jobs . . . with security that safeguards both employees and loads.

Properly fitted, Yellow Strand *Braided* Slings, will give long-lived, economical service. Send details of your application now and let B & B engineers offer a recommendation. Broderick & Bascom Rope Co., St. Louis 15, Mo. *Branches:* SEATTLE, Portland, New York, Chicago, Houston. *Factories:* SEATTLE, St. Louis, Peoria.



RIGGERS' HAND BOOK FREE
Shows sling types, fittings, capacities. Write for your copy.

*PATENTS: U. S., 1675889, 1994971, 2142641, 2142642, 2299008; CANADIAN, 202874, 250088

BRODERICK & BASCOM
Yellow Strand
BRAIDED SAFETY SLINGS

(Continued from page 111)

February 24

N. J., Palmyra—Palmyra School Bd., Palmyra school, $400,000. Micklewright & Mountford, 72 Ewing St., Trenton, archts. CD 9/1—ENR 9/30.

About March 3

✝N. M., Las Cruces—U. S. Eng., P. O. Box 1538, Albuquerque, completing motor testing facilities (White Sands P. G. P 96-D), approx. 7 mi. south of U. S. Hy. 70 and 20 mi. east of here, Dona Ana Co., Serial No. Eng. 29-005-49-58.

✝Tex., El Paso—U. S. Eng., P. O. Box 1538, Albuquerque, N. M., converting 63-man barracks to BOQ's Bldgs. Nos. T672, T685, and T686, Serial No. Eng.-29-005-49-57. Plans deposit $10.

LOW BIDDERS

Minn., Minneapolis—University of Minnesota, R. S. Callaway, purch. agt., 323 Administration Bldg., Main Campus, Jan. 18, general contract chemical engineering bldg., Washington Ave. between Church and Union Sts., from H. N. Leighton Co., 716 S. 7 St., **$662,760.** CD 1/4—ENR 1/13.

●✝N. M., Los Alamos—U. S. Atomic Energy Comn., Los Alamos, Jan. 18, high school, Serial No. 291-49-72, from Robert E. McKee, P. O. Box 1706, Santa Fe, **$1,080,203.** CD 1/5.

✝Pa., Chambersburg—U. S. Eng., Letterkenny Ordnance Depot, Chambersburg, rehabilitation Shop Bldg. 57, from Herre Bros., 1250 N. 7 St., Harrisburg, **$132,000.**

✝Tenn., Oak Ridge—U. S. Atomic Energy Comn., P. O. Box 365, Jan. 19, school in Neighborhood 11, from A. Farnell Blair, Inc., 306 Spring St., N. W., Atlanta, Ga., **$412,419.** CD 12/17—ENR 12/30.

CONTRACTS AWARDED

N. C., Gastonia—Gastonia City School Bd., Gastonia, Arlington Junior High School alterations, addns., to Robert H. Pinnix, Gastonia, **$250,476.** Bids 12/21. V. W. Breeze & Assoc., Shelby, archts.

●Pa., Torrance—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, general contract male and female patients' bldgs. at Torrance State Hospital, to Navarro Corp., Navarro Bldg., 6219-21 Broad St., Pittsburgh, **$2,323,000;** plumbing and drainage, to **Sauer, Inc.,** 2701 East St., Pittsburgh, Zone 14, **$388,000.** Bids 12/8, awarded 1/21. CD 12/13—ENR 12/16, under LB.

COMMERCIAL BUILDINGS

BIDS ASKED

Que., Drummondville—Seminary of Nicolet, seminary addn. $350,000. Deshaies & Depocas, 3465 Cote des Neiges Rd., Montreal, archts. CD 6/28/46—ENR 7/11/46.

SOON LETS CONTRACT

Pa., Harleysville—Charles M. Talley, archt., 314 W. Broad St., Telford, soon lets contract insurance bldg., for Harleysville Automobile Mutual Insurance Co., Harleysville, $600,000. CD 12/30—ENR 1/6.

Pa., Phila.—Aaron Colish, archt., 117 S. 17 St., soon lets contract apartment development, Johnson and Greene Sts., for Johnson and Greene Sts., for Johnson Park Manor, c/o architect, $300,000.

LOW BIDDERS

●Pa., Lewistown—Lewistown Hospital, Lewistown, Jan. 14, hospital alterations, addns., from C. C. Davis Constr. Co., 220 Bridge St., New Cumberland, **$1,154,440.** CD 12/30—ENR 1/6.

CONTRACTS AWARDED

●Calif., Palo Alto—Barrett & Hilp, 918 Harrison St., San Francisco, 125 residences in tract lying north and west of Green Gables, Owner builds, **$1,500,000.** Arthur G. James, 418 Ramona St., Palo Alto, engr.

●Calif., San Mateo—David D. Bohannon Organization, 849 San Mateo St., thirty-eight 2 story bldgs. housing 503 apartments, in Hillsdale Tract, Owner builds, **$5,500,000.**

Minn., Marshall—Church of the Holy Redeemer, Rev. R. A. Neudecker, Marshall, general contract 2 story, 150x236 ft. school and convent, to Hassien & Sons, Marshall, **$500,000.** CD 12/2—ENR 12/9.

●N. J., Fort Lee—Sarner & Solow, 1480 W. Terrace Circle, West Englewood, 28 apartments for 2,600 families on 64 acre tract between Routes 4 and 9 W. Owner builds, **$20,000,000.** Max Simon, 1841 Broadway, New York 23, N. Y., archt.

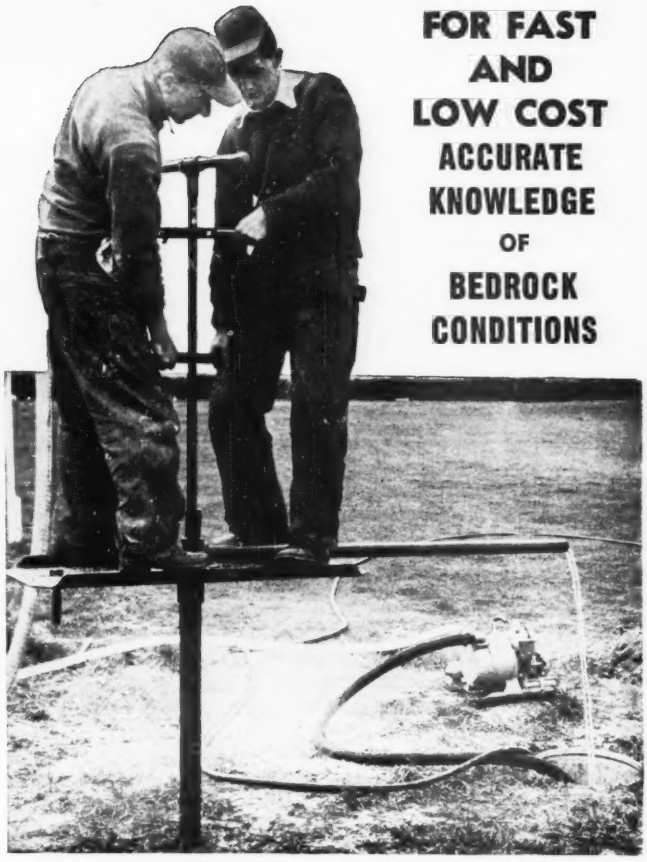
O., Youngstown — Cosmopolitan Housing Corp., Myron Arenowitz, pres., 3453 Arden Blvd., 44 pre-fabricated dwellings, E. Florida and E. Phila. Aves. Owner builds, **$264,000.**

Pa., Allentown—Jacob Schnitzer, 35 N. 18 St., residential development, West End, separate contracts, **$250,000.**

Pa., Glenside—A. Moore Lifter, 1108 Melrose Ave., Melrose Park, residential development, Chatterwood and Easton Rds., separate contracts, **$250,000.** E. Wenge, McClatchy Bldg., Upper Darby, archt.

Tex., Bellaire—J. D. Vanderwoude, Rusk Bldg., Houston, 33 dwellings, Southern Oaks Sect. of Bellaire, to T. H. Standcliff, Kress Bldg., Houston, **$285,000.** CD 1/19.

Tex., Dallas—Roy and W. A. Jacobie, J. A. Gaddis and R. A. Ellis, 4449 Travis St., 28 dwellings, eastern Dallas, outside city limits. Owner builds. **$250,000.**



FOR FAST AND LOW COST ACCURATE KNOWLEDGE OF BEDROCK CONDITIONS

Empire **HYDRAULIC TESTING DRILL**

When you drill to bedrock you want to know your subsurface conditions—but at LOW COST. Here is the rig that you can transport and set up easily and economically in rough country, with a couple of men if necessary. Designed especially for this class of work. Extensively used by U. S. and State Governments and many others. Extremely strong and simple.

●Easy to transport, setup, take down

JUST THE DRILL FOR ROUGH COUNTRY

Outfit weighs only a total of 800 lbs. for 50 ft. drilling depths. Gives accurate samples of materials drilled. Every part can be handled by one or two men. Send for descriptive circular giving complete specifications. It will help if you advise us regarding drilling depths and general nature of work.

NEW YORK ENGINEERING COMPANY
75 WEST ST., NEW YORK, N. Y.
Works: YONKERS, N. Y.

Avail Yourself of YUBA'S World-Wide Dredge Experience NOW

Yuba offers you information and consulting service based on actual operating experience and 40 years of designing and building bucket ladder dredges and dredge parts for use from Alaska to New Zealand, from Siberia to Bolivia. Yuba dredges now in use are producing big yardages on all types of alluvial deposits.

No matter what your dredging problem—deep ground, hard bedrock, clay, boulders, levee building; deepening, widening or changing channels; cutting canals, or production of sand and gravel, YUBA can help you.

Bucket Sizes and Digging Depths

Yuba dredges operating today range in bucket capacities from 2½ to 18 cu. ft., and in digging depths from 15 feet or less to as deep as 124 feet below water level. Each dredge was designed for its specific job.

Consult Yuba NOW

Our engineers can give you helpful, accurate information concerning any dredging problem you may have. No obligation. Wire or write us TODAY.

YUBA DREDGES — PROVED DEPENDABILITY AROUND THE WORLD

FREE 32-page booklet of action pictures, shows how Yuba has solved dredging problems with either new or redesigned dredges, all over the world. Write for your copy NOW.

YUBA MANUFACTURING CO.

Room 715, 351 California St., San Francisco 4, California, U. S. A.

AGENTS { BIME, DARBY & CO., LTD. • SINGAPORE, KUALA LUMPUR, PENANG.
SHAW DARBY & CO., LTD., 14 & 19 LEADENHALL ST., LONDON, E. C. 3.

CABLES: YUBAMAN, SAN FRANCISCO • SHAWDARBCO, LONDON

Tex., Houston—S. N. Adams, 3713 Inwood Rds., shopping center, day labor, **$725,000.** CD 1/21.

Tex., Houston—L. F. Corrigan, Mercantile Bank Bldg., Dallas, shopping center, Bellaire and Wesleyan Sts., to Curlee Constr. Co., 6648 S. Main St., **$840,000.** CD 3/18/48—ENR 3/25/48.

Tex., Houston — Home Owned Properties, Scanlan Bldg., housing on part of 58.9 acre site, own forces. **$650,000.** CD 1/6—ENR 1/20.

●**Tex., Houston** — Martin Nadelman, 5305 Blythwood St., 300 dwellings, Scott Terrace at Scott St., etc., day labor. **$2,100,000.** CD 1/21.

Tex., LaPorte—Moore & Moore, LaPorte, housing, day labor. Approx. **$250,000.** CD 1/19.

●**Tex., San Antonio**—V. F. Buchek & Co., Majestic Bldg., 1,000 dwellings, own forces **$3,750,000.** CD 1/12.

●**Tex., San Antonio**—L. E. Fite Co., 109 Donaldson Ave., 75 dwellings. Owner builds. **$1,750,000.** CD 1/12.

Tex., Sherman—Sherman Industrial Foundation, Sherman, 56 residences, 12¾ acre site, own forces. **$325,000.**

Que., Montreal—Oratory of St. Joseph, 3820 Queen Mary Rd., boiler house and connecting tunnel, Basilica St. Joseph, Piedmont Rd., to Hereux & Robert Ltd., 1414 Crescent St., **$320,000.** R. Fortin, 3581 Northcliffe Ave., engr. CD 1/21/46—ENR 1/31/46.

INDUSTRIAL BUILDINGS

BIDS ASKED

February 8

Minn., Rochester — WAREHOUSE, etc. — Peoples Co-operative Assn., H. C. Blumentritt, Rochester, 1 and 2 story, brick warehouse, office and garage, $115,000. Extended date. Long & Thorshov, 100 Metropolitan Life Bldg., Minneapolis, archts. CD 12/23—ENR 1/6.

Bids Asked

N. J., Trenton — INDUSTRIAL — Keystone Structural Steel Co., N. Olden Ave. extens., industrial bldg. Approx. $68,000. Arthur N. Rogers, 125 Morningside Dr., archt.

Pa., Bridgeport — FACTORY — Tube Methods, Inc., Bridgeport, factory addns., alterations. $70,000. George A. Greeby, Montgomery Trust Arcade, Norristown, engr.

Pa., Lancaster — LABORATORY — Prach & Prach, archts., 119 Federal St., Pittsburgh, engineering laboratory bldg. for Hamilton Watch Co., Lancaster. $700,000.

SOON LETS CONTRACT

Del., Claymont — MANUFACTURING — Worth Steel Co., Claymont, soon lets contract mfg. bldg. addn. Over $68,000. George J. Smith, c/o owner, ch. engr.

Ore., Eugene — WAREHOUSE — C. P. Tillman Co., 5 West and Charnelton Sts., soon lets contract 104x160 ft., rein.-con. warehouse. Percy D. Bentley, Eugene, archt.

Pa., Red Hill — TEXTILE MILL — Charles M. Talley, archt., 314 W. Broad St., Telford, soon lets contract textile mill addn., for Rayflex Mfg. Co., Red Hill. Approx. $68,000. CD 12/22—ENR 12/30.

CONTRACTS AWARDED

Ala., Gadsden — BUS TERMINAL — Crescent Stages c/o contractor, bus terminal, to Mayhew & Sons, Gadsden. Est. **$100,000.** Bids 11/12. CD 11/5—ENR 11/11.

Calif., Oakland — FACTORY — S. T. Johnson Co., 940 Arlington St., steel factory, to Harry K. Jensen, 1425 44 Ave. Est. **$84,000.** J. Y. Long Co., 1141 Franklin St., engr.

Del., North Claymont — WAREHOUSE — General Chemical Co., 1100 Lime St., Camden, N. J., 2 story, 100x145 ft., steel, asbestos siding warehouse, to E. F. Kamp Co., 98 Park Pl., New York, N. Y., over **$75,000.** CD 10/11—ENR 11/18.

Ill., Chicago — FACTORY — Clark Water Heater, 5201 W. 65 St., 1 story, brick, steel factory, addn., to Algot B. Larson Co., 3837 W. Lake St. Est. **$250,000.** CD 11/22—ENR 11/25.

Ill., Franklin Park — PLANT — Bruner & Lay, Inc., 727 S. Jefferson St., Chicago, tool mfg. plant, separate contracts, **$250,000.** W. Fred Dolke Jr., 189 W. Madison St., Chicago, archt.

●**Ill., Lockport** — PLANT — Globe Oil & Refining Co., 59 E. Van Buren St., Chicago, plant unit, catalytic cracking, to Chicago Bridge & Iron Co., 332 S. Michigan Ave., Chicago. **$1,500,000.** Universal Oil Products Co., 310 S. Michigan St., Chicago, engr.

N. J., Camden — STORAGE, etc. — Camden Wallpaper Co., 2104 N. Front St., Phila., Pa., 2 story, bsmnt., 50x150 ft., brick storage and store bldg., to S. Yellin & Son, Inc., 222 N. 11 St., Phila., Pa., over **$68,000.** Lewis J. Cowan, 1237 Market St., Phila., Pa., archt.

Ore., Madras — PLANT — Eastern Oregon Mills, Inc., Madras, bulk storage feed and seed plant, to A. S. Fetterman, 3437 N. Willamette St., Portland, **$300,000.** Awarded 1/18.

●**Pa., Ambridge** — PLANT — General Motors Corp., Fisher Body Div., General Motors Bldg., Detroit, Mich., contract for machinery fdns., changing columns, etc. for blanking plant alterations, to Darin & Armstrong Co.

Inc., 2041 Fenkel St., Detroit, Mich. Total cost **$2,000,000.** CD 11/11—ENR 11/25.

Tex., Electra — REFINERY — Texas Co., Texas Bldg., Houston, modernizing, expanding gasoline refinery, own forces. **$700,000.** CD 7/1—ENR 7/15.

Tex., Houston — BOILER PLANT — Memorial Hospital, 602 Lamar St., boiler plant addn., Dallas and La. Sts., own forces. Approx. **$100,000.** Reg. P. Taylor, Bankers Mortgage Bldg., engr. CD 1/24—ENR 1/27, under Commercial Bldgs.

Tex., Jonesville — PLANT — Byrd Oil Corp., Tower Petroleum Bldg., Dallas and Ed. Hurley, Atlas Bldg., Shreveport, La., 20,000,000 ft. daily capacity gas dehydration plant, own forces. Approx. **$750,000.** CD 1/12—ENR 1/27.

Tex., Longview — PLANT — Johnson Enterprises, Longview, plant unit, own forces. **$250,000.** CD 1/7.

Tex., San Antonio — PLANT or FACTORY —Harry Natkin, c/o San Antonio Chilli Canners, 422 Chestnut St., 25,500 sq. ft. hollow tile, brick plant or factory, own forces. **$115,000.** CD 1/19.

Tex., San Antonio — WAREHOUSE — Sears, Roebuck & Co., 1409 S. Lamar St., Dallas, 104,000 sq. ft. warehouse, to C. L. Browning, Jr., Insurance Bldg., **$375,000.** Bids 12/28. CD 12/27—ENR 12/20.

Ont., Toronto — FACTORY — Firestone Enterprises Inc., 252 Victoria St., concrete, brick factory. Owner builds. **$70,000.** E. I. Richmond, 455 Spadina Ave., archt.

Ont., Gilmour — MINE DEVELOPMENT — Bouzan Gold Mines Ltd., 25 W. King St., Toronto, lead property development. Owner builds. **$474,000** available.

Que., Montreal — POWER HOUSE — Ogilvie Flour Mills, Ltd., 930 Mill St., power house, to E. G. M. Cape & Co. Ltd., 620 Cathcart St. Est. **$300,000.** R. A. Rankin & Co. Ltd., 1420 W. Sherbrooke St., engr.

Ont., Sturgeon Falls — PLANT — Abitibi Power & Paper Co. Ltd., 408 University Ave., Toronto, plant, to Foundation Co. of Ontario, Ltd., 1220 Bay St., Toronto. Est. Over **$100,000.** Stadler-Hurter Co., 117 W. Ste. Catherine St., Montreal, engr.

UNCLASSIFIED

BIDS ASKED

February 10

Minn., Winona—BLEACHERS, etc.—State Dpt. Admin., P. T. Peterson, dir. Purchases, 19 State Capitol, St. Paul, concrete bleachers, athletic field, State Teachers College, $50,000. Plans deposit $15. Boyum, Schubert & Sorensen, Winona, archts.

February 23

Calif., Albany—SWIMMING POOL—Albany Unified School Dist., 1009 Santa Fe Ave., rein.-con. swimming pool on high school grounds. Over $50,000. Plans deposit $20. Dragon, Schmidts & Hardman, 1320 University Ave., Berkeley, archts.

LOW BIDDERS

Ia., Sioux City—SWIMMING POOL, etc.—Morningside College, Morningside Ave., Jan. 12, swimming pool, field house, from W. A. Klinger Co., Benson Bldg., **$328,187.** CD 12/23—ENR 12/30.

CONTRACTS AWARDED

●**Fla., Tampa**—FREIGHT YARD SYSTEM—Seaboard Airline R.R., W. D. Simpson, ch. engr., S. A. L. R. R. Bldg., Norfolk 10, Va., about 1¼ mi. freight yard sys., in East Tampa, incl. 25 tracks with capacity of 2000 cars. Owner builds. **$1,858,892.**

†**Mont., Fort Peck**—GENERATOR—U. S. Eng., Fort Peck, generator at power plant, Serial No. Eng. 24-016-49-29, to Allis Chalmers Mfg. Co., 1126 S. 70 St., Milwaukee, Wis., **$685,200.** Bids 1/4. CD 1/20—ENR 1/27, under I.B.

North Dakota—RURAL DISTRIBUTION LINES — Tri-County Electric Cooperative, Carrington, labor for 174 mi. rural distr. lines, Stuttsman Co., to Bloedow & Klubunde, Clements, Minn., **$51,528.** Bids 11/23. CD 11/17—ENR 11/25.

Texas—OIL PIPELINES—Placid Oil Co., City Bank Bldg., Shreveport, La., 2 four in. crude oil pipelines across Intracoastal Waterway and toward Galveston, 20 mi. northeast of Galveston, Galveston Co., own forces. Approx. **$60,000.**

Tex., Bellville—TRANSMISSION and DISTRIBUTION LINES—Houston Lighting & Power Co., 1016 Walker St., Houston, transmission and distr. lines, own forces. **$375,000.** CD 5/24—ENR 6/3, under Industrial Buildings.

Tex., Corpus Christi—BASEBALL PARK, etc.—George Schepps, 4041 Lawther Dr., Dallas, baseball park and stadium, force account. **$90,000.**

Tex., New Braunfels—RADIO STATION—Scruggs Enterprise, New Braunfels, radio station, day labor. **$75,000.**

B. C., Victoria—ARENA—City, City Hall, memorial ice arena, to Luney Bros. & Hamilton Ltd., 825 Bay St., **$160,000.** CD 10/22—ENR 11/4.

Provides Performance Never Before Attainable In Small Type Excavating Equipment

Model 310 General ¾ Cu. Yd. Power Shovel.

Among the numerous advantages of this new type, crawler mounted GENERAL are 100% air control of basic motions through an air actuated, finger touch lever system . . . "Air Cushion Clutch" on reversing and retract mechanisms . . . bigger, easier operating brakes . . . larger shafts and liberal use of anti-friction bearings . . . deck gears recessed, fully enclosed, and running in oil . . . live, independent, worm driven boom-hoist with power up and power down for Crane, Dragline, and Clamshell service . . . independent travel, two speeds in either direction, steers without stopping . . . drumshaft operates in anti-friction bearings and end is capped with a lifetime, dustproof, GENERAL designed seal.

The GENERAL MODEL 310 is available with independent chain crowd shovel boom assembly, with crane boom for clamshell, dragline, and hookblock work, and as a hoe. Boom assemblies can be changed with a minimum of effort in the field.

●

These new features with the many others provided on the Model 310 give you increased earning power which will pay for the cost of the machine in a very short time. Write for complete details.

POWER SHOVELS • CRANES • DRAGLINES • CLAMSHELLS • BACKHOES • PILE DRIVERS

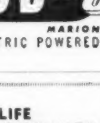
THE OSGOOD CO. O-G THE GENERAL CO. EXCAVATOR

MARION OHIO

DIESEL GASOLINE OR ELECTRIC POWERED • ⅜ TO 2½ CU. YD. • CRAWLERS & MOBILCRANES

GET **TWICE** THE LIFE AND SAVE WITH

"GUNITE"



Investigate its possibilities. Pneumatically Applied to Any Surface Any Thickness. Bunker Stacks, Tunnels, Reservoirs, Sewers, Walls, Tanks.

Gunite specialists since 1915.

Engineering Data—Estimates

SHOTCRETE CONSTRUCTION CO.

102 Locust St. Garden City, N. Y.

Garden City 7-5451

DRILLING
ANYWHERE

We look into the earth

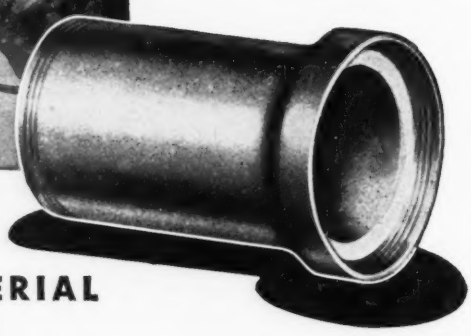
PENNSYLVANIA
DRILLING COMPANY
PITTSBURGH, PA.

VITRIFIED CLAY PIPE

RESISTS CORROSION

. . . *in one of world's largest sewers*

Kissena Corridor Park Sewer, part of New York City's new $10 million sewer project, is constructed of 18-inch Vitrified Clay Pipe. The main tunnels of this huge sewer are larger than the Holland Tunnel! They're designed to service 75,000 to 100,000 badly needed homes. Construction is by the City of New York, President of the Borough of Queens, Bureau of Engineering, Division of Sewer Construction.



NO FOREIGN MATERIAL IN CLAY PIPE

Vitrified Clay Pipe is not a compound or mixture of materials loosely held together by a chemically bonded agent. Clay in its natural stage is fused at high temperatures by means of an exclusive process called Vitrification. Clay Pipe is a permanent, *heat-bonded* material that will serve mankind for centuries without wearing out. Vitrification is the reason why Clay Pipe is acid-proof, rust-proof, does not crumble and won't disintegrate.

If you need specific information on a Clay Pipe question, write the details to the office nearest you.

NATIONAL CLAY PIPE MANUFACTURERS, INC.

100 N. LaSalle St., Rm. 2100, Chicago 2, Ill.
522 First National Bank Bldg., Atlanta 3, Ga.
703 Ninth and Hill Bldg., Los Angeles 15, Calif.
C-249-1 1105 Huntington Bank Bldg., Columbus 15, Ohio

Vitrified
CLAY
CLAY PIPE NEVER WEARS OUT!
PIPE

CONSTRUCTION REPORTS Second Section

WATER SUPPLY

BIDS ASKED

February 10

Mass., Boston—Metropolitan Dist. Comn., 20 Somerset St., Contr. 165, furnishing, del. screens, gate valves, sluice gates, pressure reducing valves, pressure relief valves, air valves, aircocks, crane hoist, Venturi meters and recorders, compound water meter and recorder, hydrant, water level recording gauge Chicopee Valley Aqueduct, Belchertown, Ware and Ludlow. CD 5/12/44—ENR 6/1/44.

February 16

†Tex., Camp Hood (P. O. Killeen)—U. S. Eng., 606 Santa Fe Bldg., Galveston, WW sys. extens., improvs., Inv. No. Eng-41-245-49-181. Est. $40,000. Extended date. CD 1/4.

February 19

Wis., Fond du Lac—City, deepwell turbine pump; 15x21 ft. brick, rein.-con. pump station incl. fittings valves and 350 ft. supported on wooden pile bents. Plans deposit $15. Consoer, Townsend & Assoc., 351 E. Ohio Ave., Chicago, Ill., engrs. CD 8/7/45—ENR 8/9/45.

February 24

Fla., Winter Haven—City, WW imprvs. Extended date. Russell & Axon, P. O. Box 1431, Daytona Beach, engrs. ENR 11/18.

March 8

O., Toledo—City Div. Water, 110 Cherry St., high service pump. unit, appurtenant work; Div. DD, high service pump. unit with maximum total capacity of 65 m.g.d.; Div. EE, piping, equip. and general work; Div. FF, electrical work at Collins Park. $252,473. Plans deposit $20. Greeley & Hansen, 220 S. State St., Chicago, Ill., engrs. CD 8/18—ENR 8/26.

LOW BIDDERS

†Fla., New Orleans—U. S. Eng., 606 Santa Fe Blvd., Galveston, Tex., Jan. 20, water supply at Camp LeRoy Johnson. Serial No. Eng., 41-243-40-174, from Union Constr. Co. Inc., 2643 Almonaster Ave., **$66,991.** Est. $73,640. CD 12/28—ENR 1/6.

La., Natchitoches—City, City Hall, Jan. 21, 1,700,000 gal. rein.-con. reservoir, rein.-con. brick power plant, from Barnett Brazner, Box 654, Baton Rouge, **$190,655.** CD 1/7—ENR 1/13, under Water Supply and Public Bldgs.

Md., Towson—Bd. Comrs. Baltimore Co., Court House, Jan. 24, storm drains, sewers and water line, 9th Elec. Dist., Contr. 153 D. S. & W., from The Matricciani Constr. Co., 229 S. Exeter St., Baltimore, **$69,073.** CD 1/17—ENR 1/20.

†Tex., Fort Bliss (El Paso P.O.)—Office Quartermaster, Purchasing & Contg. Div., Fort Bliss, Jan. 14, water distr. sys. replacement, Inv. No. E-41-014-49-37, from Brown-Olds Plumbing & Heating Corp., 716 N. Piedras St., El Paso, **$28,385.**

CONTRACTS AWARDED

Fla., Macclenny—City, WW sys., force account. **$75,000.** Russell & Axon, P. O. Box 1431, Daytona Beach, engrs.

Tex., Houston—Lawrence O'Donnell & Assoc., Tidwell Rd., water and sanitary sewer lines, own forces. **$65,000.**

Tex., Houston—Port Comn., Wharf 13, rehabilitation 3 water supply storage tanks, to Carpenter Constr. Co., c/o owner, **$29,000.** CD 7/6/44—ENR 7/26/44, under Earthwork, Waterways.

B. C., Vancouver—Greater Vancouver Water Dist., 500 Beatty St., supply and delivery 8,100 ft. 24- to 60- in. steel pipe, to Vancouver Iron Works, Ltd., 1155 W. Sixth Ave., **$92,000.** Bids 12/15, awarded 1/14.

Ont., Bowmanville—Municipality, 6 in. watermains, to Dover Constr. Co. Ltd., 75 Main St., Brampton. Est. over **$75,000.** Bids 1/19. CD 12/28—ENR 1/6.

Ont., Leaside—Progressive Sub-Division Ltd., 303 Central Bldg., Toronto, watermains, to Osler Contg. Co., 217 Osler St., Toronto. Est. **$40,000.**

Ont., Oakville—Municipality, screen wall and low lift pumphouse, incl. 36-in. conduit, to King Paving Co. Ltd., 7 Sixth Lane, Dineen-Phillips & Robert, 63 John St., Hamilton, engrs. CD 9/27—ENR 10/28.

SEWERS, WASTE DISPOSAL

BIDS ASKED

February 7

N. Y., Mt. Kisco—Village Clk., Village Hall, pump. stations, sewers, appurtenances. Plans deposit $10. CD 12/14—ENR 11/16/44.

February 9

Md., Baltimore—Mayor & City Council, City Hall, furnishing, installing mechanical and electrical equip., incl. centrifugal sewage pumps, gasoline engine, generator set, vacuum pumps, c.i. and steel pipelines, gate valves, cone valves, sluice gate, venturi meter, etc., Brooklyn Sewage Pumping Station, Hanover St. near Chesapeake Ave., Sanitary Contr. 340. Plans deposit $5. CD 1/27/44—ENR 2/10/44.

February 10

Tex., Lubbock—City, W. H. Rogers, mayor, sanitary sewer imprvs., lift station, lines and laterals. $90,000. R. L. Oldham, city engr. CD 12/19/45—ENR 1/10/46.

February 11

Calif., Armona—Armona Sanitary Dist., 609 Pima St., sanitary sewers, sewage disposal plant. Over $50,000. Plans deposit $15. L. Cedric Macabee, 150 University St., Palo Alto, engr. CD 11/24—ENR 12/2.

Pa., Phila.—Dpt. P. Wks., City Hall Annex, sewers for new housing in various locations. Over $100,000. A. Zane Hoffman, c/o owner, ch. engr. CD 1/31/45—ENR 2/22/45.

February 14

Pa., Ringtown — Boro, Ringtown, sewage treatment plant and collection sys., $100,000. Capital Eng. Corp., Dillsburg, Pa., engrs. CD 6/30/47—ENR 7/24/47.

About February 15

La., Shreveport — City, City Hall, Bayou Pierre Sanitary Sewer Imprvt. proj. $800,000. Black & Veatch, 4706 Broadway, Kansas City, Mo., engrs.

February 15

Calif., Los Angeles—Bd. Supvs. Los Angeles Co., 501 Hall of Records, 23,950 ft. 8- to 12-in. vitr. clay sanitary sewers, Church St., 105 brick sewer structures, (C. I. 1264), Pico. Over $50,000. C. E. Arnold, 205 S. Bway., co. engr.

February 16

Pa., Embreeville—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, storm sewers at Embreeville State Hospital. Plans deposit $5. Baader, Young & Schultze, 1500 Walnut St., Phila., Zone 2, engrs.

February 17

Kan., Pratt—City, at office E. J. Ball, clk., City Hall, sanitary sewer extens. Plans deposit $10. Wilson & Co., 223 N. Santa Fe St., Salina, engrs.

February 22

Mich., Detroit—City, Dpt. P. Wks., 104 City Hall, riverfront sewers, Mt. Elliott and East Jefferson, First St., Front St. to Woodbridge, Brooklyn and West Jefferson, Contr. PW 173. Plans deposit $10. CD 9/11/45—ENR 9/20/45.

February 24

Conn., Bristol—City, Rolfe E. Rowe, clk., City Hall, 12,000 ft. 8-to 15-in. sewers, 4,700 ft. 14 in. c.i. force mains, appurtenances; brick, concrete sewage pump. station. Plans deposit $10 each. Metcalf & Eddy, 1300 Statler Bldg., Boston, Mass., engrs. CD 2/3/44—ENR 3/23/44.

February 24

Fla., Winter Haven—City, sanitary sewer imprvs. Russell & Axon, P. O. 1431, Daytona Beach, engrs. CD 2/2/45—ENR 2/8/45.

February 24

●O., Akron—M. L. Davis, serv. dir., Municipal Bldg., sludge digestion tanks, sludge heating and gas bldgs., gas holder, waste liquor disposal plant and by-pass conduit, Contr. 13, Akron Sewage Treatment Plant. Over $1,000,000. Plans deposit $25. Havens & Emerson, 1140 Leader Bldg., Cleveland, engrs. CD 10/6/43—ENR 10/14/43.

About March 1

Ark., Forrest City—City, Forrest City, imprv. sewerage sys., $300,000. Marion Crist & Assoc., Union Life Bldg., Little Rock, engrs. **CD 10/31**—ENR 11/11.

LOW BIDDERS

O., Toledo—Comrs. Lucas Co., Courthouse, rejected bids Jan. 13, drainage on Lallendorf Rd., **$125,000.** Will re-advertise. CD 1/4. under Streets and Roads.

Wash., Union Gap—City, City Hall, Jan. 18, treatment plant, from Rushlight Automatic Sprinkler Co., 55 N. E. Farragut St., Portland, Ore., **$151,336;** sewers, from R. M. Moss & Co., Zenith, **$154,887.** CD 1/4.

CONTRACTS AWARDED

Ariz., Tempe—City iron sewer pipe, fittings, valves and hydrants, to U. S. Pipe & Fdry Co., 448 S. Hill St., Los Angeles, Calif., **$90,000.**

Calif., Tulare—City, City Hall, storm drain sys., drainage pump stations, to W. M. Lyles Co., Box 594, Avenaland, and Wm. Russell Atkinson, 5534 E. Tulare St., Fresno, **$80,876.** Bids 1/20. Ralph W. O'Neill, 302½ S. Brand Blvd., Glendale, engr. CD 5/5/46—ENR 5/9/46.

Calif., Walnut Creek—Central Contra Costa Sanitary Dist., 1822 Mt. Diablo Blvd., sewage laterals, Dist. 6, Pleasant Hill East, near here, to Martin Bros., Box 5, Concord, **$107,156.** Bids 1/20. CD 1/4.

Minn., Minneota—City, K. P. Kompelein, clk., City Hall, sewage treatment plant, and sanitary sewer extens., separation storm and sanitary sewers, to Phelps Drake Co., 1415 Southeast 8 St., Minneapolis, **$116,787** and **$80,158** respectively. Bids 11/29 and 10/18 respectively. CD 10/25—ENR 10/28 and CD 10/6.

Minn., St. Paul—City, J. J. McDevitt, purch. agt., City Hall, Cleveland-Sheridan Sewerage Sys., Sect. B, to Orfel & Mariana, 1744 Sheridan Ave., **$79,069.** Bids 1/4. G. M. Shepard, city engr.

Ont., Bowmanville—Municipality, sanitary sewers, to Dover Constr. Co. Ltd., 75 Main St., Brampton, Est. **$70,000.** Bids 1/10. CD 12/28—ENR 1/6.

Ont., Leaside—Progressive Sub-Division Ltd., 303 Central Bldg., Toronto, sewers, to Leaside Constr. Co. Ltd., 48 Lavender Rd. Est. **$50,000.**

Ont., Wallaceburg — Municipality, sewers, Elgin St., from Forban to Selkirk, etc., own forces. **$50,000.** CD 7/12/45—ENR 7/26/45.

Que., La Tuque—Municipality, sewers, day labor. **$75,000.** A. Gagnon, La Tuque, engr. CD 1/10—ENR 2/3.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $28,000; other public works $50,000; industrial buildings $68,000; other buildings $250,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	

Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.;

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
●	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

BRIDGES

LOW BIDDERS

●Delaware—State Hy. Dpt. at office W. W. Mack, dir. Delaware Crossing Div., Continental American Bldg., Wilmington, Jan. 25, from American Bridge Co., 71 Broadway, New York, N. Y., Contr. 4, towers and suspended steel work for Delaware Memorial Bridge over Delaware River, Wilmington Co. **$6,139,300;** Contr. 5, cables and suspenders **$2,311,985;** Contr. 6, approach superstructure steelwork, **$5,299,805.** CD 12/13—ENR 12/16.

●Maryland—State Hy. Dpt., Baltimore, Jan. 25, grading, drainage, surf. sect. Washington-Baltimore Expressway, 3 interchange grade separation structures, 2 grade separation structures approaches, grading, drainage, rein.-con. surf. 2.112 mi. connecting roadways. Proj. AA 368-4-358, Anne Arundel Co., from C. J. Langenfelder & Son, Inc., 8427 Pulaski Hy., Baltimore, **$1,330,695.** CD 1/4—ENR 1/13.

New Jersey—State Hy. Dpt., Trenton, Jan. 20, Inman Avenue grade separation, Route 25, Sec. 7 C, Middlesex Co., from Lugano Bros., Inc., 172 Passaic Ave., Belleville, **$127,046.** CD 1/4—ENR 1/13.

Va., Richmond—City, Jan. 25, repairing Ninth Street Bridge, from J. Kennon Perrin Co., 5 and Cary Sts., **$83,316.** CD 12/23—ENR 12/30.

Wisconsin—State Hy. Comn., Madison, Jan. 18, 0.08 mi. structures, West County Line-Loganville Rd., S. T. Hy. 154, Proj. S 0216 (4), Sauk Co., from Vallentine & Voss, P. O. Box 826, Madison, **$118,486** 0.455 mi. West Bridge and Approaches, U. S. H. 45-Kilbourn-ville Rd., C. T. Hy. G, Proj. S 0855 (1), Racine Co., from Eric Bolander Constr. Co., Winchester Rd., **$73,298.** CD 12/29—ENR 1/6.

CONTRACTS AWARDED

Alberta—Province of Alberta, Edmonton, bridge over Red Deer River, Empress, to O'Sullivan Constr. Co. Ltd., River Bottom, Lethbridge, **$65,000.**

STREETS AND ROADS

BIDS ASKED

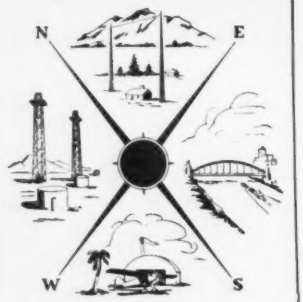
February 14

Tex., Beaumont—Jefferson Co., Courthouse, road imprv. all-weather surf., Lawhon, Boyt, Pecan, Farm-Brooks Rds., $70,000. Charles Davidson, City Hall, city engr. CD 7/17/47—ENR 8/7/47.

February 15

Calif., Los Angeles — Bd. Supervs. Los Angeles Co., 501 Hall of Records, imprv. Elmdale Ave., (C. C. 0-6 9) Compton. Over $50,000. C. E. Arnold, 205 S. Bway., co. engr.

IN EVERY CLIMATE



Hot-Dip Galvanizing Provides the UTMOST in Rust Prevention!

In every part of the world—wherever exposed installations and equipment of iron or steel must render dependable uninterrupted daily duty—Hot-Dip Galvanizing through cumulative evidence and the test of time has convincingly proved its superiority as a rust preventive.

Alloys Base Metal With Molten Zinc

Only the Hot-Dip Galvanizing Process *actually alloys* protective molten zinc to the base metal, sealing in iron and steel against the ravages of rust and corrosion.

Billions of dollars are being saved every year through the wisdom that specifies: "Hot-Dip Galvanize," and the foresight that designates a member of the American Hot Dip Galvanizers Association to provide this utmost in rust prevention service.

Write for Membership Roster

For membership roster or any information in regard to *your* particular corrosion problems, address The Secretary, American Hot Dip Galvanizers Association, Inc., First National Bank Bldg., Pittsburgh, Pa.

hot-dip GALVANIZING

February 16

Tex., Canadian — City, Jess B. Lindley, mayor, street imprvs, asphalt paving, 20,000 lin. ft. con. curb and gutters; $6,000 sq. yd. grading and paving, etc., $75,000. Plans deposit $15. Joe E. Ward, 545 Nacol Bldg., Wichita Falls, Tex., engr.

February 18

Tex., Houston — Harris Co., Courthouse, asph. hard-surf. 3 mi. Stella Link Rd. between Bellaire Blvd. and S. Main St. $85,000. Hugo Zapp, co. engr. CD 8/28/47—ENR 9/18/47.

LOW BIDDERS

Arizona—State Hy. Comn., Phoenix. Jan. 12, blt. 7 2/3 mi. Ehrenberg-Wickenburg Hy., Yuma Co., from J. E. Skousen, Mesa, $113,810. CD 1/5.

Colorado—State Hy. Dpt., Denver, surf., oil processing, structures 4.94 mi. Hy. 14, between Fort Collins and Walden, Larimer Co., from Carl V. Hill, Greeley, $155,935. CD 1/11—ENR 1/13.

†**Nevada**—Public Roads Admin., Heroes Memorial Bldg., Carson City, cancelled bids to have been opened Feb. 1, highway constr. Dalzell Canyon, in Toiyabe Natl. Forest Proj. 6-B, Lyon Co. CD 1/17—ENR 1/20.

North Carolina—State Hy. & P. Wks. Comn., Raleigh, Jan. 25, blt. 7.315 mi. from point on U. S. 321, approx. 4.5 mi. south of Gastonia, southwest to South Carolina State Line, Proj. 9-302, Gaston Co., from Lavender Bros., Earl, $55,572 est. $50,000-$75,000***macad. and blt. 1.81 mi. from intersections of 12 Ave. and 23 St. in Hickory, west to point west of Burke Co. line, Proj. 9-214, Catawba and Burke Counties from A. R. Thompson Contractor, Inc., 219 N. Main St., Rutherfordton, $69,058, est. $75,000-$100,000***macad. blt. conc. binder 8.99 mi. from Roanoke River Bridge north of Weldon to Virginia State line on U. S. 301, Proj. 1706, Northampton Co., from F. D. Cline Constr. Co., Box 349, Raleigh, $278,824 est. $250,000-$300,000***c. conc. 10.386 mi. U. S. Route 64, from point east of Martin Co. line to point in Roper, Proj. 1972, Washington Co., from Rea Constr. Co., Box 2015, Charlotte, $293,940 est. $250,000-$300,000*** sand blt. and structures 6.835 mi. Temporary N. C. Rte. 52, from point approx. 1,500 ft. northwest of White Oak, northwest to Cumberland Co. line, Proj. 3024, Bladen Co., from Ballenger Paving Co., Box 1046, Greenville, S. C. $100,839, est. $100,000-$125,000. CD 1/14—ENR 1/20 and CD 1/19.

Wisconsin—State Hy. Comn., Madison, Jan. 18, c. conc., 0.532 mi. Center Ave. (city of Janesville), U. S. Hy. 51 from Station 0 plus 33 to Station 28 plus 37.5, Contr. 1, Proj. U 05-1 (18), Rock Co. from Thomas M. Madden Co., 4610 Van Buren St., Chicago, Ill., $111,407 ***gray, 4.957 mi. Mayen East County Line Rd., S.T. Hy. 77, Proj. S 0106 (5), Ashland Co., from Bacco Constr. Co., Home Furniture Bldg., Iron Mountain, Mich. $113,321***bit. 0.0785 mi. N. Church St., S.T. Hy. 26, Proj. U 010-1 (10) and U 010-1 (8), Jefferson and Dodge Counties, from E. & C. Co., 819 E. Burleigh St., Milwaukee, $111,916. CD 12/29—ENR 1/6.

CONTRACTS AWARDED

Calif., San Francisco—State Div. Architecture, Pub. Wks. Bldg., Sacramento, blt. etc. at 1-A Dist. Agricultural Assn., to Allyn L. Burr Co., 2417 28 St., Sacramento, and J. Henry Harris, 2657 9 St., Berkeley, $65,342. CD 12/28—ENR 1/6.

●**New York**—Bureau Contracts & Accounts, Albany, paving 4.08 mi. Ontario Thruway, new location of Canandaigua Connection to Route 332, to Bero Eng. & Constr. Corp., McKinley Bldg., Buffalo, $1,419,353. CD 10/29—ENR 11/4.

Tex., Beeville—Hall's Acres, Beeville, street asph. paving, several units, to M-J Constr. Co., Beeville, $68,000.

Tex., Houston—Lawrence O'Donnell & Assoc., Tidwell Rd. street constr. and shelling, own forces, $50,000. CD 10/29/45—ENR 11/15/45.

Tex., Nacogdoches—Nacogdoches Co., road resurf. imprv. bridge work throughout the county, force account, $70,000. K. H. McMullen, Beeville, co. engr. CD 2/3/47—ENR 2/20/47.

Tex., Waxahachie—Ellis Co., Waxahachie, farm-to-market road, force account, $75,000. E. Martin, co. engr. CD 10/27—ENR 11/13.

Ont., London—Middlesex Co. Council, W. A. Sutherland, clk., London, c. conc. 20 mi., five steel, concrete bridges, gravel for roads, dust layers, own forces. Total $619,000. W. K. Clawson, County Bldgs., engr.

Ont., Simcoe—Norfolk Co. Council, Simcoe, road work, own forces, $311,580. CD 12/13/43—ENR 1/13/44.

Ont., Woodstock—Oxford Co. Council, Woodstock, road work, own forces, $291,240. CD 7/30/43—ENR 8/5/43.

Que., La Tuque—Municipality, paving and sidewalks, day labor, $80,000. A. Gagnon, La Tuque, engr.

EARTHWORK, WATERWAYS

BIDS ASKED

February 7

Ont., Thessalon—Hydro Electric Power Comn. of Ontario, 620 University Ave., Toronto, clearing land at Rocky Island Lake.

February 8

†**Arkansas**—U. S. Eng., F Bldg., 321 23 St., Wash. 25, D.C., levee work St. Francis Basin Proj., Mud slough Drainage Dist., Greene Co., Serial No. Eng-40-041-49-92. $100,000-$300,000.

February 9

B. C., Ladner Beach—Secy., c/o Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., channel protection on Fraser River, Kirkland Island Approx. $45,000. R. Blain, c/o owner, engr.

February 11

North Dakota—State Hy. Dpt., Bismarck, bank protection, U. S. Hy. 2, northwest of Arvilla, Proj. ER-F-26-(1), Grand Forks Co.

February 15

†**Pennsylvania**—U. S. Eng., P. O. Box 1715, Baltimore 3, Md., Levee Unit 2B, at Williamsport, along west bank of Millers Run and along north bank of West Branch of the Susquehanna River, Eng.-18-020-49-53.

February 16

†**Michigan**—U. S. Eng., 428 Federal Bldg., Milwaukee 1, Wis., removing, disposing approx. 267 lin. ft. inner end of old south revetment and constr. approx. 251 lin. ft. steel sheet pile south revetment at Frankfort Harbor, Serial No. Eng-47-013-49-48.

February 17

†**Louisiana**—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, snagging, clearing approx. 3.29 mi. channel Ponchatoula Creek, Mile 3.8 to Mile 7.09, Tangipahoa Parish, Serial No. Eng., 16-047-49-209.

†**North Dakota**—U. S. Eng., Fort Lincoln, Box 300, Bismarck, tunnels, Garrison Dam and Reservoir, Riverdale, Serial No. Eng.-32-015-49-60. CD 12/30—ENR 1/8.

†**Washington** — Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Odair, 10 lower-pier logs, 8 second-tier logs, 5 third-tier logs and 3 top-tier logs, not incl. rubber seals; one lifting frame for Grand Coulee Dam, Columbia Basin Proj. Spec. 2540.

February 24

†**Washington**—Bureau Reclamation, Dpt. Interior, Bldg. 1 A, Denver Federal Center, Denver, Colo., furnishing, installing elevators for Grand Coulee Pumping Plant, Grand Coulee Dam, 30 mi. northeast of Odair, Columbia Basin Proj., Spec. 2543. L. N. McClellan, ch. engr.

February 25

†**Kansas-Missouri**—U. S. Eng., 601 Davidson Bldg., Kansas City, Mo., Levee Unit 440-R, right bank Missouri River, Atchison and Doniphan Counties, Kan., and Buchanan Co., Mo., north of Atchison, Kan., involving 141,000 cu. yd. excav., 2,684,000 cu. yd. earth fill, 1,010 ft. 24- to 72-in. corrugated metal pipe, 2 flapgates, 3 sluice gates, Serial No. Eng. 23-028-49-149.

†**North Dakota**—U. S. Eng., Fort Lincoln, P. O. Box 300, Bismarck, concrete aggregates, Garrison Dam, Riverdale, Eng. 32-015-49-63. CD 6/1/44—ENR 6/15/44.

†**Washington**—Bureau Reclamation, Dpt. Interior, Coulee Dam, furnishing, del. f.o.b. cars shipping point or f.o.b. cars Pasco, 2,300 volt switchgear for Burbank Pumping Plant 1, Columbia Basin Proj., Spec. R1-CB7. Plans deposit $2.50.

March 1

†**Oklahoma**—U. S. Eng., Box 61, Gov. Aircraft Plant 3, Tulsa, design, manufacture and deliver f.o.b. railroad cars at Gore two 28,500 hp. hydraulic turbines, Tenkiller Ferry Dam Power Plant, Illinois River, Eng. 34-066-49-67. Est. $700,000-$800,000.

March 3

†**Mass., West Springfield**—U. S. Eng., Army Base, Boston, Zone 10, Riverdale Dike and Wayside and Riverdale Pumping Stations, Serial No. Eng. 19-016-49-35. CD 1/11—ENR 1/13.

March 8

†**Virginia**—U. S. Eng. foot of Front St., Norfolk, Zone 1, furnishing tainter gates, operating machinery and controls for Buggs Island Dam, Roanoke River.

March 15

†**Arizona-Nevada** — Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., 15,000-kva. substation near Blythe, Calif., approx. 12 mi. north of Blythe, Calif., in NE sec. 24, T.5S, R. 23 E. approx. 2,000 ft. west of U. S. Hy. 95, Davis Dam Proj., Spec. 2538. Extended date. CD 1/5—ENR 1/13.

Bids Asked

†**Missouri and Kansas**—U. S. Eng., 601 Davidson Bldg., Kansas City, Mo., clearing, grubbing, levee embankment, drainage structures, channel excav., rip-rap protection, Levee Unit 440-R, Atchison and Doniphan Counties, Kan., and Buchanan Co., Mo.

LOW BIDDERS

†**Georgia-South Carolina**—U. S. Eng., Post Office Bldg., Savannah, Ga., Jan. 20, clearing reservoir, Group 1-A, Clark Hill Proj., Savannah River Basin, Savannah River, Inv. No. Eng. 09-133-49-89, Item 1, from Delta Constr. Co., Columbia, S. C., $135,575; Item 2, from L. H. Simkins, Augusta, Ga., $319,000. CD 12/30—ENR 1/6.

●†**Kentucky**—U. S. Eng., 303 U. S. Courthouse, Nashville 1, Tenn., Jan. 20, clearing approx. 38,000 acres in Wolf Creek Dam

Reservoir, Serial No. Eng-40-068-49-54, from Shutt Constr. Co., Genoa, Wis., $4,094,000. CD 12/29—ENR 1/6.

Massachusetts—City of Boston, Dpt. P. Wks., City Hall Annex, Boston, Jan. 25, earth excav, refilling, etc., West Roxbury, Hyde Park and Brighton, from James A. Freaney, Inc., 1 West St., Hyde Park, $59,938***Fall River, from Elliott & Watrous, Inc., Crest Ave., Riverside, R. I., $183,300***Dorchester, from Appel & O'Toole, 78 Moreland St., Roxbury, $59,225***Boston, from Construction Units, Inc., 294 Washington St., Boston, $69,900. CD 1/21, under Mass., Boston and Mass., Fall River.

†**New Mexico**—Bureau Reclamation, Dpt. Interior, P. O. Box 1609, Amarillo, Tex., Jan. 18, earthwork structures, Hudson Canal, Lateral Unit 7 and drainage work, at Tucumcari, from D. D. Skousen, Albuquerque, $634,722. CD 12/20—ENR 12/30.

†**Oklahoma**—Bureau Reclamation, Dpt. Interior, P. O. Box 1609, Amarillo, Tex., earthwork, structures and drainage work, W. C. Austin Proj., Altus, from Stamey Constr. Co., Hutchinson, Kan., $98,658.

†**Oregon and Washington**—U. S. Eng., Pittock Block, Portland, Ore., Jan. 14, dredge side channel in Columbia River from point 550 ft. below Longview bridge to connection with main ship channel below Mt. Coffin, No. 35-026-49-358, from General Constr. Co., 4850 N. W. Front St., Portland, $154,550. Est. $129,260. CD 1/5.

Pennsylvania—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, Jan. 19, protection river bank, Pennsbury Memorial, Falls Twp., Bucks Co., from Tri-County Contractors, High School Rd. and Harrison Ave., Elkins Park, Phila., Zone 17, $35,515. Est. $40,000. CD 12/20—ENR 12/30.

†**Pa., Punxsutawney**—U. S. Eng., 925 New Federal Bldg., Pittsburgh, Zone 19, Jan. 18, removing structures, incl. excav, paving, piling, concrete structures, etc., Mahoning Creek through Punxsutawney, from Ruth Constr. Co., Scottdale, $1,190,086. Est. $1,250,000. CD 12/17—ENR 12/30.

†**Virginia**—U. S. Eng., foot of Front St., Norfolk, Jan. 19, temporary government facilities at Philpott Reservoir Proj., Smith River. Spec. 599. Serial No. Eng-44-110-49-117 from M. F. Mason, Bassett, $53,325. CD 12/27—ENR 1/6.

CONTRACTS AWARDED

†**Pennsylvania**—U. S. Eng., Standard Oil Bldg., Baltimore 2, Md., levee raising and seepage control svs. at Kingston, Luzerne Co., Eng. 18-020-49-35, to Wagner Constr. Co., 115 S. Wyoming Ave., Kingston, $116,290. Bids 1/18. CD 12/30—ENR 1/6.

†**Washington**—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, restoring breakwater Neah Bay, Serial No. Eng. 45.108-49-94, to Manson Constr. & Eng. Co., 821 Alaskan Way, Seattle, $83,450. Est. $97,095. Bids 1/24.

N. S., North Sydney—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., breakwater repairs, to Martell's Trucking Service, Ltd., North Sydney. Approx. $48,000. Bids 9/29. CD 9/14—ENR 9/18.

Que., Montreal — Dpt. Transport, Hunter Bldg., Ottawa, Ont., exten. Lock 5, Lachine Canal, to Foundation Co. of Canada, Ltd., 1900 Sherbrooke St. W., Approx. $100,000.

AIRPORTS AND AIRBASES

BIDS ASKED

February 10

Ala., Auburn — AIRPORT—City, c/o Purchasing Agt., Auburn, airport, $74,500. Plans deposit $25. CD 12/4/44—ENR 12/14/44.

†**Md., Baltimore**—PARKING APRON—U. S. Eng., 1 and Douglas Sts. N. W., Wash., D. C., national guard aircraft parking apron, Baltimore Municipal Airport, Serial No. Eng. 49-080-49-83 (25)M.

February 23

†**Va., Oceana** — AIR STATION REPAIRS, etc.—At Pub. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk, 11, Va., runways, taxiways and parking aprons repairs at Naval Auxiliary Air Station, Spec. No. 21328. Plans deposit $10. CD 4/4/45—ENR 4/12/45.

February 24

†**Minn., Duluth**—AIRPORT—U. S. Eng., 1709 Jackson St., Omaha, 2, Neb., preparation site and aprons, taxiways for Air National Guard Facilities, at Duluth Municipal Airport, Serial No. Eng. 25-066-49-174. CD 1/17—ENR 1/20.

About March 1

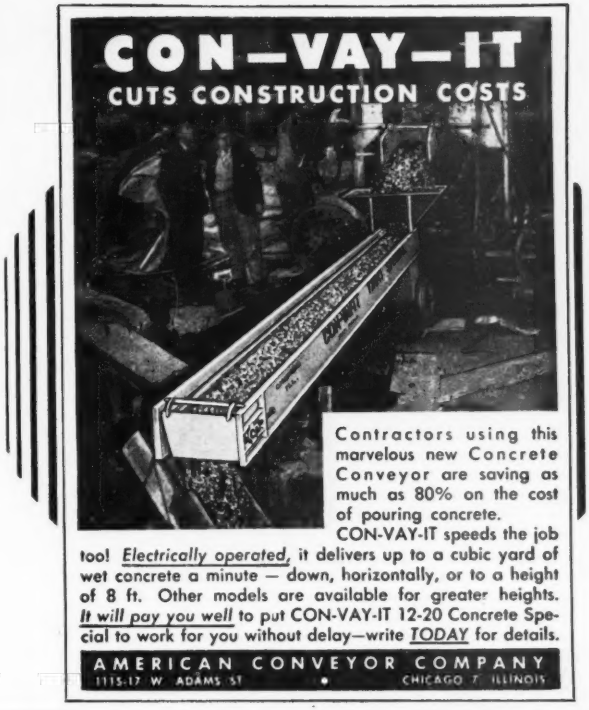
Kan., Paola and Osawatomie—AIRPORT—Cities of Paola and Osawatomie, airport to be situated between the two cities, $82,000. H. R. Hunter, 105 W. English St., Wichita, engr.

March 8

†**Minn., Duluth**—AIRPORT IMPRVS.—U. S. Eng., 1709 Jackson St., Omaha, Neb., 130 x 160 ft. Butler type hangar, rein.-con. lean-to, 53 x 60 ft. heating plant, 21,000 sq. ft. EDR boiler, stoker, pumps, receiver tank and appurtenances, furnish, install electrical facilities, Air National Guard Facilities, Duluth Municipal Airport, Serial No. Eng. 25-066-49-176. CD 1/26—ENR 2/3.

LOW BIDDERS

Mass., East Boston—ELECTRICAL SERVICES—Commonwealth of Mass., P. Wks., Dpt., 100 Nashua St., Boston, Jan. 18, Pro-



Contractors using this marvelous new Concrete Conveyor are saving as much as 80% on the cost of pouring concrete.

CON-VAY-IT speeds the job too! *Electrically operated,* it delivers up to a cubic yard of wet concrete a minute — down, horizontally, or to a height of 8 ft. Other models are available for greater heights. *It will pay you well* to put CON-VAY-IT 12-20 Concrete Special to work for you without delay—write *TODAY* for details.

AMERICAN CONVEYOR COMPANY
1115-17 W. ADAMS ST. • CHICAGO 7, ILLINOIS

Saving Ways in Doorways
KINNEAR
ROLLING DOORS

The KINNEAR Manufacturing Co.
Factories: 1820-40 Fields Ave., Columbus 16, Ohio
1742 Yosemite Ave., San Francisco 24, California
Offices and Agents in Principal Cities

PITTSBURGH
•DES MOINES
ELEVATED
STEEL TANKS

Dependable water service, property protection and insurance savings are among the many advantages provided by Pittsburgh-Des Moines Elevated Steel Tanks. *Let us consult on your needs!*

PITTSBURGH • DES MOINES STEEL COMPANY

Pittsburgh, Pa.	3414 Neville Island
Des Moines, Ia.	915 Tuttle Street
Santa Clara, Cal.	621 Alviso Road

★ The above picture of a small Sauerman Scraper digging gravel from pit and delivering to crushing plant shows the simple effectiveness of this method. This Sauerman machine uses 4½ gals. of gasoline to move 45 cu. yd. of material per hour.

YOU CAN SAVE

with

POWER SCRAPERS and CABLEWAYS

SAVINGS in equipment cost, time and labor are your direct gains on dig-and-haul jobs with a Sauerman Scraper or Cableway.

ONE-MAN CONTROL, fast and positive action. Reaches across a river, pond, pit or stockpile, or to top of hill—moves material from any point within cable radius, and dumps automatically wherever desired.

Whether you handle a few tons a day, or many thousand tons, we can supply size and type of equipment that will meet your exact requirements economically. It will be built to give you years of service and require little by way of repairs.

SAUERMAN BROS., INC.

532 S. Clinton Street — Chicago 7, Illinois

WRITE FOR CATALOG

"GUNITE"

NEW CONSTRUCTION AND REPAIRS OF

- Prestressed Tanks
- Linings for Reservoirs, Pen Stocks, Smokestacks, Tunnels
- Sewer Repairs
- Steel Encasements
- Renewal of Disintegrated concrete
- Repairs to All Types Masonry
- Latest Equipment . . . Skilled Workmen

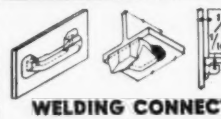
Write for our new Bulletins

PRESSURE CONCRETE CO.

Engineers & Gunite Contractors

SO. COURT ST., Florence, Ala. — 193 EMMET, Newark, N. J.

33 N. LA SALLE ST., CHICAGO, ILL.



WELDING CONNECTORS

Saxe System Welded Connection Units for welded assembly

Saxe Units place in position and securely hold together structural parts to be welded.

As used in many welded structures they *eliminate all hole punching*, producing an economical, rigid, safe and quickly erected structural frame.

Write for 58 pg. Manual containing full engineering design information for welded structures.

J. H. WILLIAMS & COMPANY

Buffalo-7, New York

Canadian Representatives

G. D. PETERS CO., Montreal-2, Canada

UNDERPINNING & FOUNDATION CO., INC

Hercules Piles — Caissons — Cofferdams

Arresting of Foundation Settlement

Shafts — Tunnels — Subways — Excavations

Engineering Construction of All Types

NO PROJECT TOO LARGE — NONE TOO SMALL

ENGINEERS & CONTRACTORS

155 East 44th Street — New York 17, N. Y.

posals A and B, electrical services for terminal facilities, Logan Airport, from D. A. Robbins Electric Co. P. O. Box 53, Chestnut Hill, $155,680 and $121,000 respectively. CD 1/10—ENR 1/13.

Va., Richmond—AIRPORT—City, City Hall, Jan. 25, grading, concrete work and bit. surf around administration bldg., at Byrd Airport, from Atlantic Bituthic Co., Munsey Bldg., Wash., D. C., $208,903. CD 1/6—ENR 1/13.

CONTRACTS AWARDED

●**Calif., Los Angeles**—AIRPORT—City, Bd. Airport Com., 5800 Avion Dr., grading, etc. Los Angeles Municipal Airport, Alternate A, to N. M. Ball, Santa Barbara, Harms Brothers, Stockton Blvd., Sacramento, and H. Earl Parker, Marysville, $3,363,738. Bids 10/29. CD 11/2—ENR 11/11, under LB.

Conn., Windsor Locks—TERMINAL BLDG. —State Comptroller, State Capitol, Hartford. Bradley Field Terminal bldg. addns., alterations, to Morris Juster, 175 Manchester St., Hartford. Est. $50,000. Bids 11/26. CD 11/19—ENR 12/2.

+**Wash., McChord Field (br. Tacoma)**—THEATRE—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, remodeling theatre, to Nyanza Constr. Co., 6314 Avalon St. S. W., Tacoma, $67,890. Est. $62,726. Bids 1/25. CD 12/30—ENR 1/6.

Alta., Cowley — AIRPORT IMPRVS.—Dominion Govt., Ottawa, Ont., Airport Imprvs., to Oland Constr. Co., 1709 Third St., South Lethbridge. Est. $75,000. Dpt. Transport, Ottawa, Ont., engr.

B. C., Prince George—AIRPORT IMPRVS.—Dominion Govt., Ottawa, Ont., airport imprvs., to C. H. Neff, 1559 Beach St., Vancouver. Est. $73,000. Dpt. Transport, Ottawa, Ont., engr.

N. S., Greenwood—AIRPORT IMPRVS.—Dominion Govt., Dpt. National Defense (Air), Cartier Sq., Ottawa, Ont., airport imprvs., to A. P. Byers Constr. Co. Ltd., 5625 Western Ave., Montreal, Que. $70,250. Canadian Commercial Corp., 70 Lyon Sq., Ottawa, Ont., engrs.

PUBLIC BUILDINGS

BIDS ASKED

February 9

Colo., Denver—School Dist. 1, W. W. Grant, pres. Bd., 414 14 St., Stedman School grade school addn. 13 Ave. and Dexter St. $250,000. Plans deposit $25, returnable. G. Meredith Musick, 1000 Patterson Bldg., engr. and archt. CD 12/27—ENR 1/20.

February 10

Ky., Paris—Bourbon Co., Paris, hospital. Plans deposit $20. John T. Gillig, 180 Walnut St., Lexington, archt. CD 10/21—ENR 11/11.

Mass., Amherst—Commonwealth of Mass., University of Mass., R. D. Hawley, treas., Amherst. 3 story, brick, steel animal disease control laboratory, P-E 12. $500,000. Plans deposit $20. R. D. Kimball Co., 6 Beacon St., Boston, engrs. CD 8/12—ENR 8/19.

N. Y., New York—New York City Housing Auth., 63 Park Row, Zone 7, heating and ventilating for Gun Hill Houses, Proj. NYC-9 in area bounded by Holland Ave., Gun Hill and White Plains Rds., Magenta St. and Cruger Ave. and a line south of and parallel with Magenta St., Bronx Boro. Extended date. CD 1/6—ENR 1/13.

●**Va., Williamsburg**—At office of J. Kennon Perrin, Co., general contractors, Fifth and Cary Sts., Richmond, installing ash and coal handling equip. in boiler plant at Eastern State Hospital's new site at Dunbar Farm, near here. $3,000,000. Wiley & Wilson, American Bldg., 10 and Main Sts., Richmond, engrs. CD 12/7/44—ENR 12/28/44.

Ont., Wallaceburg—Wallaceburg Dist. High School Bd., F. K. Rupert, secy., 2 story, 160x280 ft., L-shaped, concrete, brick, rein.-con. high school. Approx. $475,000. Plans deposit $25. S. B. Coon & Son, 4 St. Thomas St., Toronto, archts. CD 7/15—ENR 7/29.

February 11

Tex., Fort Worth — Fort Worth Public Schools, Ed P. Williams, bus. mgr., 409 E. Weatherford St., remodeling old bldgs. making 19 classrooms in all. 3000 N. W. 26 St. $250,000. Plans deposit $25. C. O. Chronmaster, 408 Century Bldg., archt. CD 3/19/45—ENR 4/5/45.

B. C., Chilliwack—Bd. Trustees School Dist. 33, high school. Approx. $730,000. Sharp & Thompson, Inc., 1155 W. Pender St., Vancouver, archt.

February 14

Calif., Alhambra — Alhambra City School Dist., 601 N. Garfield Ave., 375x400 ft. Martha Baldwin School, Almansor and Los Higos Sts. $600,000. Marsh, Smith & Powell, 816 W. 5 St., Los Angeles, archts. CD 4/26—ENR 5/13.

N. J., Burlington—Bd. Educ., Burlington, Samuel Smith High School addn. $443,035. Micklewright & Mountford, 242 E. Hanover St., Trenton, archts. CD 10/6—ENR 10/14, under LB.

Que., Drummondville — C. P. LaBranche, archt., Drummondville, 2 story, 85x214 ft., refn.-con., steel, brick municipal garage, for Municipality. $275,000. O. Bessette, city engr.

About February 15

N. C., Charlotte—City School Bd., City Hall, Chantilly School. $400,000. M. R. Marsh, Builders Bldg., archt.

February 15

Del., Wilmington — Delaware National Guard, New Castle County Airport, New Castle, warehouse and office, $50,000. W. Ellis Preston, 903 Jefferson St., archt. CD 10/28—ENR 10/28.

Ky., Louisville — Jefferson Co., Louisville, Shelbyville Road School, Over $200,000. Fred J. Hartstern, Realty Bldg., archt.

N. Y., Brooklyn—New York City Housing Auth., 63 Park Row, New York, Zone 17, general constr., heating and ventilating, electrical work, plumbing, and elevators for Glenwood Houses, Proj. No. NYC-12, in area bounded by Farragut Rd., E. 56 St., Avenue H, Glenwood Rd. and Ralph Ave., Brooklyn Boro. Plans deposit $75 for elevators, $25 for other work. CD 7/1—ENR 7/22.

Tex., Angleton—Angleton Independent School Dist., Angleton, high school, $300,000. Ernest L. Shult, 5009 Fannin St., Houston, archt. CD 10/27—ENR 11/11.

†Wyoming—Bureau Reclamation, Dpt. Interior, Casper, Medicine Bow substation, Kendrick Proj. just north of U. S. Hy. 30 at west end of town of Medicine Bow, Spec. 2539.

B. C., Campbell River—Secy., c/o Trustees School Dist. 72, 1 story school; 2 story high school, 1 story vocational unit, 2 story gymnasium, auditorium unit, 1 story administration bldg. $520,000. Sharp & Thompson, Berwick, Pratt, 1165 W. Pender St., Vancouver archts.

February 16

●Mass., Lexington—Town, Supt. Schools, High School Bldg., 1475 Massachusetts Ave., 2 story, brick Senior High School, Waltham St. $2,000,000. Plans deposit $35. Perry, Shaw & Hepburn, 21 St. James Ave., Boston, archts. CD 11/4—ENR 11/25.

N. Y., Thiells—Bureau Contract & Accounts, Albany, 4 infirmary bldgs. at State Hospital, for Dpt. Mental Hygiene. Plans deposit $30. CD 7/11/45— ENR 7/26/45.

February 17

Tex., San Benito—San Benito Independent School Dist., San Benito, 1 story buff facing tile walls, etc. Fred Booth School, drilled footings, concrete piers and grade beams, field house, rein.-con. fdn. $250,000. Plans deposit $25. Wyatt C. Hedrick, 5201 Fannin St., Houston, archt.

About February 19

†R. I., Pawtucket—U. S. Eng., Bldg. 21, Naval Drydocks South Boston, Mass., 52x100 ft. motor vehicle storage bldg. (National Guard). Plans deposit $10.

February 19

Tex., Bishop — Bishop Independent School Dist., Bishop, masonry school stadium-gymnasium. $250,000. Welton Cook, 341 Wilson Bldg., Corpus Christi, archt. CD 5/6—ENR 5/27.

About February 21

Calif., Redondo Beach—City, City Hall, high school, incl. administration bldg., library, cafeteria shop, girls gymnasium, Manhattan Hermosa High School. $939,000. Samuel Lundeen, 400 Rowan Bldg., archt. CD 1/15/47—ENR 2/6/47.

†Kansas—U. S. Eng., 601 Davidson Bldg., Kansas City, Mo., administration facilities at Kanapolis Dam, incl. administration bldg., residence, sewage and water sys., electrical distr. sys., entrance structure, driveway, etc., Kanapolis Dam site, Smoky Hill River, 18 mi. southeast Ellsworth. Serial No. Eng. 23-028-49-148. CD 1/28.

February 21

Pa., Uniontown—Bd. Educ. North Union Twp., Uniontown, superstructure 2 story, 128x138 ft., brick high school addns., Coolspring St., near here. $300,000. Altman & Altman, Uniontown, archts.

February 23

Wash., Seattle — City, County-City Bldg., Zone 4, construction contract on powerhouse, penstock tunnel and appurtenant work for Unit 24 of Gorge powerhouse exten. at Newhalem. Approx. $250,000. E. R. Hoffman, city light supt. CD 4/16—ENR 4/29.

W. Va., Keyser—West Virginia University, Morgantown, 3 story, part bsmt., 71x158 ft. rein.-con. brick, limestone, asphalt tile, ceramic tile, terrazzo, marble science bldg., $400,000 Plans deposit $100. L. D. Schmidt & Son, Professional Bldg., Fairmount, archt.

February 24

Fla., Jacksonville—City, Electric Power Plant 2. Plans deposit $75, Reynolds, Smith & Hills, 220 Park St., archts.

February 25

●N. Y., Troy—Bd. Contr. & Supply, City Hall, high school, $1,500,000. Plans deposit $150. Frank Morgan, 253 Broadway, archt. CD 1/17/46—ENR 3/7/46.

March 1

Fla., LaBelle—Hendry Co., LaBelle, jail, James Gamble Rogers II, Winter Park, archt.

Ore., Eugene—Bethel School Dist. 52, 1000 Bethel Dr., wood frame Bethel High School. $400,000. Plans deposit $100. Wilmsen & Endicott, Tiffany Bldg., archts. CD 10/27—ENR 11/11.

March 1

Ont., London—John M. Watt, archt., 343 Richmond St., 3 story, bsmt., 46x87 ft., rein.-con. brick wing to War Memorial Childrens Hospital, for Victoria Hospital Trust, 319 Ottawa Ave. Approx. $485,000. CD 2/27/47—ENR 3/20/47.

March 2

Pa., Embreeville—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, general contract, heating and ventilating, plumbing and drainage, electrical work, elevators for male and female ward bldgs. at Embreeville State Hospital. Plans deposit $15 for general constr., $10 for others. CD 11/26/47—ENR 12/11/47.

About March 8

†Me., Caribou—U. S. Eng., Bldg. 21, U. S. Naval Drydock, South Boston, Mass., 52x72 ft. motor vehicle storage bldg. Plans deposit $10.

†Me., Gardiner—U. S. Eng., Bldg. 21, U. S. Naval Drydock, South Boston, Mass., 52x72 ft. motor vehicle storage bldg. Plans deposit $10.

†Me., Millinocket—U. S. Eng., Bldg. 21, U. S. Naval Drydock, South Boston, Mass., 52x90 ft. motor vehicle storage bldg. Plans deposit $10.

†Me., Westbrook—U. S. Eng., Bldg. 21, U. S. Naval Drydock, South Boston, Mass., 52x72 ft. motor vehicle storage bldg. Plans deposit $10.

On or About March 10

†Neb., Omaha—U. S. Eng., 1709 Jackson St., Omaha, Zone 2, 1 manager's residence; 1 nurses' quarters; 1 attendants quarters; 2 staff duplexes; conc. drives and parking areas; water, sewer, gas, steam and underground electric service line; grading and seeding, at Veterans Admin. Hospital, Spec. No. Eng-25-066-49-177, for Veterans Admin., Vermont Ave. between H and I Sts. N. W., Wash. 25, D. C. Plans deposit $10.

March 10

La., Opelousas—St. Landry School Bd., 5 public units at Morrow, Lawrell, Leonville, Washington, and Port Barre. $450,000. Theodore Perrier, Opelousas, archt. CD 12/30/48—ENR 1/6/49.

About March 11

†Tenn., Nashville—Pub. Bldgs. Admin., U. S. Courthouse Nashville, office bldg., Proj. No. 40-080. FWA.

About March 12

†Mass., Framingham—U. S. Eng., Bldg. 21, U. S. Naval Drydock, South Boston, 52x326 ft. motor vehicle storage bldg. Plans deposit $10.

†Mass., Hingham—U. S. Eng., Bldg. 21, U. S. Naval Drydock, South Boston, 52x128 ft. motor vehicle storage bldg. Plans deposit $10.

†Mass., Quincy—U. S. Eng., Bldg. 21 U. S. Naval Drydock, South Boston, 52x128 ft. motor vehicle storage bldg. Plans deposit $10.

About March 14

†Alaska, College—At office L. W. Friberg, div. engr., U. S. Court House, Seattle, Wash., geophysical institute (laboratory and 6 residences), Proj. No. 50-012. CD 7/23—ENR 8/5.

About March 22

†Conn., Ansonia—U. S. Eng., Bldg. 21, Naval Drydocks, South Boston, Mass., 52x128 ft., motor vehicles storage garage. CD 12/23—ENR 12/30.

†Conn., Manchester—U. S. Eng. Bldg. 21, Naval Dry Dock, South Boston, Mass., 52x128 ft. motor vehicles storage garage. CD 12/27—ENR 1/30.

†Conn., West Haven—U. S. Eng., Bldg. 21, Naval Drydocks, South Boston, Mass., 52x128 ft. motor vehicles storage garage. CD 12/23—ENR 12/30.

About March 26

†Mass., Boston—U. S. Eng., Bldg. 21, U. S. Naval Drydock, South Boston, 48x234 ft. motor vehicle storage bldg. Plans deposit $10.

†Mass., Fall River—U. S. Eng., Bldg. 21, U. S. Naval Drydock, South Boston, 52x185 ft., with smaller sect. 31x46 ft. motor vehicle storage bldg. Plans deposit $10. CD 12/13—ENR 1/6.

†Mass., Lynn—U. S. Eng., Bldg. 21, U. S. Naval Drydock, South Boston, 52x128 ft. motor vehicle storage bldg. Plans deposit $10.

†Mass., Taunton—U. S. Eng., Bldg. 21, U. S. Naval Drydock, South Boston, 41x122 ft., smaller sect. 35x40 ft. motor vehicle storage bldg. Plans deposit $10. CD 12/13—ENR 1/6.

March 28

†Alaska, College—L. W. Frieberg, div. engr., 123 U. S. Court House, Seattle, 4, Wash., laboratory and 6 residences for Geophysical Institute, Proj. No. 50-012, for P. Bldgs. Admin., 18 and F Sts. N. W., Wash. 25, D. C. Extended date. CD 1/21—ENR 2/3.

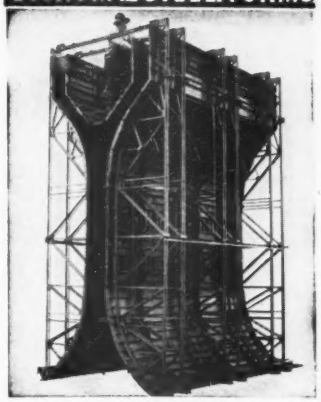
Late in March

Ont., Fort William—McKellar General Hospital Bd., Fort William, 80 x 125 ft., concrete, brick heating plant, $90,000. Govan & Assoc., 515 Jarvis St., Toronto, archts., Morrison & Assoc., 96 W. Bloor St., Toronto, engrs. LOW BIDDERS

D. C., Wash.—District Govt., District Bldg., Jan. 18, laboratory at Gallinger Municipal Hospital, from Roystone, Grimm & Sammons, 1115 Wilson Blvd., Arlington, Va., $317,506. CD 12/29—ENR 1/13.

●†D. C., Wash.—Pub. Bldgs. Admin., 18 and F Sts. N. W., general accounting office bldg., G and H Sts. between Fourth and Fifth Sts.

Another Job Showing the ADAPTABILITY of ECONOMY STEEL FORMS



Building 8,000 feet of 20-foot wall? That was one problem in constructing a $9 million sewage treatment plant. Walls had a cross-section as shown above, to supply aeration tanks.

Economy Engineers combined regular Economy form plates with specially designed plates, bracing and trusses, into two sets of wall forms and a center "trough" to provide a uniform 3-section form. After each pour had set, the forms were stripped as units and moved to the next setting.

Approximately half of the form plates were regular units. The balance were made specially for the job—and their cost was more than offset by savings on labor and conventional form material.

This job is another instance proving that, whatever your problem may be, when placing concrete Economy Forms will consistently produce lower over-all forming costs and higher profits.

ECONOMY FORMS CORP.

A nation-wide form rental and engineering service that saves costly material and time in concrete construction. We welcome job inquiries by wire, letter or phone.

HOME OFFICE: DES MOINES, IA.

Branch offices: Dallas, Texas; Decatur, Ga.; Fort Wayne, Ind.; Metuchen, N. J.; Los Angeles, Calif.; Denver, Colorado.

N. W., from John McShain, Inc., 17 and Spring Garden St., Phila., Pa., **$21,572,000***** escalators, from Westinghouse Electric Corp., Commonwealth Bldg., **$619,815*****elevators from General Electric Co., Shoreham Bldg., **$765,784.** CD 12/6—ENR 12/9.

†Kan., Fort Leavenworth—U. S. Eng., 1709 Jackson St., Omaha, Neb., Jan. 25, electrical substation and feeder lines, Serial No. Eng. 25-066-49-155, from Johnson-Canfield Constr. Co., Northeast Bldg., Topeka, **$63,262.** Est $90,830. CD 12/29—ENR 1/13.

Miss., Ruleville—Sunflower Co., Ruleville, rejected bids Jan. 3, hospital, L. B. **$296,700.** CD 1/13—ENR 1/20, under LB.

N. M., Carlsbad — Bd. Educ., Alta Vista Junior High School, Carlsbad, Junior High School from Valley Building Co., Roswell, **$294,850.** Vorhees & Standhardt, Roswell, archts. CD 6/2.

†N. M., Las Cruces—U. S. Eng., P. O. Box 1538, Albuquerque, Jan. 18, field instrumentation stations, from King-Hoover Constr. Co., 3035 E. Washington St., Phoenix, Ariz., **$267,454.** CD 12/20—ENR 12/23.

N. Y., Brooklyn—Bd. Transportation, 250 Hudson St., New York, Zone 13, Livonia, Sheepshead and Nostrand substations for New York City Transit Sys., from Warshaw Constr. Corp., 101 Park Ave., New York, Zone 17, **$475,509.** CD 1/6—ENR 1/13.

●N. Y., Odgensburg—Bureau Contracts & Accounts, Albany, Jan. 26, general contract power house at St. Lawrence State Hospital, from John J. Harvey Co., New Hartford, **$1,058,783;** heating from Joseph Davis, Inc., 120 W. Tupper St., Buffalo, **$725,437.** CD 12/1—ENR 12/9.

Pa., Phila.—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, electrical constr. for relocating electrical sub-station at Phila. (Byberry) State Hospital, from Howard P. Foley Co., 1630 Pine St., Zone 3, **$85,690.** Est. $200,000. Simons Eng. Co., 2010 Walnut St., engr.

†Pa., Pittsburgh—U. S. Eng., 925 New Federal Bldg., Jan. 20, site clearance and development, for veterans neuropsychiatric hospital, for Veterans Admin., Vermont Ave. between H and I Sts. N. W., Wash. 25, D. C., from Ralph Myers Contr. Corp., Box 62, Perryopolis, **$849,856.** Total Est. $15,000,000. Prack & Prack, Bowers & Barbalat, and Alfred Hopkins, 923 Penn Ave., archts.

Pa., Torrance—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, Jan. 19, boiler plant improv. at Torrance State Hospital from Bessemer Constr. Co., 808 Palace Bldg., Erie, **$314,327.** Est. $276,000. H. F. Lenz, Johnstown, engr.

†Alaska, Fort Richardson—U. S. Eng., (APO 942 c/o P. M. Seattle, Wash.) Anchorage, 3 NCO apartments, from J. B. Warrak Co., Securities Bldg., Seattle 4, Wash., **$687,000.** Low bidder withdrew bid, $526,715. CD 1/24—ENR 1/27 under LB.

Ont., Toronto—Toronto East General & Orthopaedic Hospital, Coxwell Ave., Jan. 17, steel, concrete hospital wing, T-shaped, from W. B. Sullivan Constr. Ltd., 30 Bloor St. W., Approx. **$600,000.** CD 12/17—ENR 12/30.

CONTRACTS AWARDED

Calif., Stockton—San Joaquin Co., Courthouse, rein.-con. steel truss laundry for San Joaquin County Hospital, to George Rock, Box 782, Stockton, **$77,000.** Bids 1/17. Frame G. Ernst, 561 East Harding Way, archt.

●Fla., Miami—City, library, to Caldwell-Scott Constr. Co., 90 Broad St., New York, N. Y., **$1,089,493.** Bids 1/19, awarded 1/22. CD 1/25—ENR 1/27, under L. B.

Mass., Amherst—Commonwealth of Mass., University of Mass., R. D. Hawley, treas., Amherst, P-E-2 boiler house, at State College, to Daniel O'Connell's Sons, Inc., 480 Hampshire St., Holyoke, **$854,199.** Bids 12/22—awarded 1/20. CD 1/4—ENR 1/13.

Miss., Ellisville—State of Mississippi, Jackson, 2 dormitories at Feeble Minded Colony, to L. B. Priester & Sons, Meridian, **$383,000.** Bids 1/13. CD 12/8—ENR 12/16.

N. Y., Niskayuna—Bd., Educ., Van Antwerp Rd., Schenectady, general contract Junior High School addn., to Thomas C. Brown Constr. Co. Inc., P. O. Box 9-2, Schenectady, **$457,300.** Bids 1/14. CD 12/16—ENR 12/30.

O., Champion Twp. (near Warren) — Bd. Educ., Champion Twp., Trumbull Co., school addn., to W. B. Gibson Contg. Co., Warren. Est. **$332,066.**

●O., Oxford—State Dpt. P. Wks., Miami University, State Office Bldg., Front St., Columbus, 3 story, concrete, brick class room and laboratory, North Sect., to Frank Messer & Sons, 4612 Paddock Rd., Cincinnati, **$1,020,090.** Est. $700,000. CD 10/8—ENR 10/28.

Va., Alexandria—City School Bd., Alexandria, Madison Street High School, to Eugene Simpson & Bros., 2 W. Walnut St., **$638,900.** Bids 1/21. CD 12/30—ENR 1/13.

●N. B., Saint John—Central Mortgage & Housing Corp., 70 Lyon St., Ottawa, Ont., 180 dwellings, to Acme Constr. Co. Ltd., 46 Canterbury St., **$1,500,000.** CD 11/4.

COMMERCIAL BUILDINGS

BIDS ASKED

February 11

B. C., Nelson—Isa J. C. Williams, archt., Nelson, rein.-con. Mount St. Francis Infirmary and Home for Aged, for Sisters of St. Ann, Victoria, $555,000.

About February 15

Ga., Atlanta—Oakland Court Apartments, Inc., c/o Cuttins, Howard & Harley, Mortgage Guarantee Bldg., 240 apartment units. Over **$300,000.** CD 7/9/47—ENR 8/7/47

February 17

Fla., Miami Beach—Miami Beach Congregational Church, c/o Russell T. Pancoast, archt. 927-41 St., Miami Beach, 2 story, 155x235 ft. church.

February 21

Tenn., Memphis—First Baptist Church, c/o Hanker & Heyer, archts., Commerce Title Bldg., church. Over $250,000. Extended date. CD 10/25—ENR 10/28.

February 23

Calif., San Gabriel—Catholic Archdiocese of Los Angeles, 714 W. Olympic St., Los Angeles, 2 story, rein.-con. San Gabriel Mission High School, $650,000. Lawrence D. Viole, 11450 Ventura Blvd., engr. CD 1/21—ENR 1/27.

February 24

Calif., Hanford—L. H. Lipman, c/o Walter Wagner, engr. and archt. Fulton-Fresno Bldg., Fresno, 2 story, rein.-con. department store, $510,000.

Pa., Sunbury—Sunbury Community Hospital, L. G. Parrish, supt., Sunbury, general contract, heating, plumbing, electrical work and elevators for hospital. Over $250,000. Plans deposit $50. Lawrie & Green, 321 N. Front St., Harrisburg, archts. CD 11/29—ENR 12/9.

Va., Harrisonburg — Rockingham Memorial Hospital, Harrisonburg, hospital alterations, addns. Approx. $300,000. Plans deposit $75. Clarence Wenger, 213 S. Main St., archt.

February 25

Fla., Tallahassee — First Baptist Church, c/o Prentiss Huddleston & Assoc., archts., 212 N. Adams St., educational bldg. Plans deposit $50. CD 1/23/48—ENR 2/5/48.

Ga., Atlanta—Trust Company of Georgia, c/o Abreu & Robeson, archts., 22 Marietta St. Bldg., bank. Plans deposit $25.

About March 1

Tenn., Knoxville—East Tennessee Crippled Children's Hospital, c/o Shelton & Stachel, archts., 265 Moody Ave., hospital addn. $300,000. CD 4/24/46—ENR 5/9/46.

About April 1

●Tex., El Paso—Providence Memorial Hospital, Dr. L. L. Evans, 617 N. Santa Fe St., 5 story, bsmnt., hospital and nurses home. $2,500,000. Carroll & Daeuble, 1001 Yandell Blvd., archts. Landauer & Guerrero, 4401 Lemmon St., Dallas, engrs. CD 2/26/47—ENR 3/20/47.

Bids Asked

Ill., Chicago—Augustana Hospital, 401 W. Dickens St., 8 story, brick, steel, concrete hospital addn., 1 story, chapel and cloister, Schmidt, Garden & Erikson, 140 S. Michigan St., archts. CD 7/31/46—ENR 8/15/46.

Pa., Allentown—M. M. Weiner, 112 N. 7 St., office and stores $300,000. Louis Cowan, 1505 Pine St., archt. CD 9/29—ENR 10/14.

LOW BIDDERS

Mass., Greenfield — Community Y.M.C.A., 449 Main St., Jan. 19, physical plant, Community Y.M.C.A., from O. D. Purington Co., Inc., 171 Westminster St., Providence, R. I., **$379,400.** Est. $400,000. James A. Britton, 20 Federal St., archt. CD 1/10—ENR 1/13.

●W. Va., Weirton—Weirton Community Center Assoc., Weirton, rejected bids Nov. 4. 2 story, bsmnt., 100x45x0 ft., brick, stone, steel community center. **$1,200,000.** Will re-advertise. CD 10/27—ENR 11/4.

CONTRACTS AWARDED

Calif., Fresno—Loren H. McFarland, 4336 Van Ness Blvd., 25 frame, stucco duplexes, DaRota Ave., to Workman Constr. Co., c/o owner. Est. **$150,000.**

Calif., San Anselmo—Roman Catholic Archbishop of San Francisco, 1100 Franklin St., San Francisco, rein.-con. Marin County Catholic Union High School, Larkspur, to Robert McCarthy Co., 1050 Kirkham St., San Francisco, approx. **$900,000.** L. H. Nishkian & B. L. Nishkian, 1045 Sansome St., San Francisco, engrs. CD 10/8—ENR 10/21.

●Calif., San Mateo—David D. Bohannon Organization, 859 San Mateo St., 10 apartments adjacent to 573 apartment units, Hillsdale Tract. **$1,052,000.** Owner builds.

Calif., South San Francisco—Roman Catholic Archbishop of San Francisco, 110 Franklin St., San Francisco, 3 story, rein.-con. parochial school and 2 story frame convent, to Robert McCarthy Co., 1050 Kirkham St., San Francisco. Est. **$350,000.** Mario Ciampi, 323 Kearny St., San Francisco, archt. CD 11/17—ENR 12/2.

●Conn., Stamford—Third Fairlawn Corp., 1068 Main St., 156 two story, bsmnt., brick family units, garden apartments, E. Main St. Owner builds. **$1,000,000.** Everett C. Bradley, 48 Whitney Ave., New Haven, archt. CD 1/26.

Conn., West Haven—Southern New England Telephone Co., 227 Church St., New Haven, brick, steel telephone exchange addn., dial equip., Campbell Ave., to Paterson Constr. Co., 66 Anderson St., New Haven. Est. **$250,000.** CD 12/10—ENR 12/23.

D. C., Wash.—National Society Daughters of the American Revolution, 17 and D Sts. N. W., 3 story, brick, steel, concrete administration bldg. addn., to George A. Fuller Constr. Co., Munsey Bldg., **$566,115.** Eggers & Higgins, 542 Fifth Ave., New York, N. Y., archts.

D. C., Wash.—Sears, Roebuck & Co., Roosevelt Blvd. and Adams Ave., Phila., Pa., department store addn., to Irwin & Leighton Co., 1505 Race St., Phila., Pa., **$300,000.** The Ballinger Co., 121 N. Broad St., Phila., Pa., archt.

Fla., Miami — Art Bilt Homes, Inc., 711 Lanford Bldg., 104 homes in Zena Gardens. Owner builds. **$425,000.** CD 3/25/48—ENR 4/8/48.

Fla., Miami—Holland Gardens, Inc., c/o contractor, 50 homes in Sunset Heights Sect., to P. J. Davis-Smith Constr. Co., 2295 N. W. 14 St. Est. **$355,000.**

Fla., Miami—Nichols Constr. Co., 9572 Carlyle Ave., Miami Beach, 100 homes in Nichols Heights Sect. Owner builds. Over **$500,000.**

Fla., North Miami—Gaines Constr. Co., 3211 N. W. 27 Ave., Miami, 90 homes in Sunkist Grove sect. Owner builds. Over **$100,000.**

Ga., Columbus — Southern Bell Telephone Co., Hurt Bldg., Atlanta, telephone exchange bldg., to Barge-Thompson Co., 136 Ellis St. N. E. Atlanta. Est. over **$300,000.** Bids 1/17. CD 1/13—ENR 1/20.

Ia., Fort Dodge—Methodist Conference, Fort Dodge, Methodist Home for Retired Persons, to C. Glenn Walker Constr. Co., 626 N. 3 St. Est. **$550,000.** CD 11/30—ENR 12/2.

La., Lake Charles—Pittmann Theater Co., New Orleans, theater, to Pittmann Contg. Co., 2800 N. Galvez St., New Orleans, **$325,000.** George Riehl, Canal Bldg., New Orleans, archt.

La., New Orleans—Park View Homes, Inc., c/o contractor, residential development, Wakefield Pl., Duplessis, Perlita and Westbrook Sts., to Shelby Constr. Co., 4320 Paris Ave., New Orleans. **$457,849.**

Md., Baltimore—W. C. Constr. Co., Inc., 5462 Fairlawn Ave., forty-seven 2 story, 19x27x31 ft. brick, frame residences, twenty-six 1-family and twenty-one 2-family, 5500-48 5501-43 Lynview Ave., near Rogers Ave., and Reisterstown Rd., separate contracts. **$282,000.** Hal A. Miller & Assoc., 337 St. Paul St., archts.

●Mass., West Springfield—Owner, c/o Charles P. Martyn, 13 Elm St., two hundred 2 story, basement, brick garden apartments, Westfield St. and City View Ave. Sect. Owner builds. **$1,500,000.**

●Pa., Cheltenham Twp. (Cheltenham P. O.)—A. P. Orleans & Co., 100 W. Rockland St., and Tyson Constr Co., Garrett Rd. and Chestnut Ave., Upper Darby, apartment development and shopping center, separate contracts. **$22,000,000.**

Pa., Greensburg — Bell Telephone Co. of Penna., 416-7 Ave., Pittsburgh, 2 story, 60x100 ft., brick, tile, steel general office, to David T. Riffle, Inc., 1006 Forbes St., Pittsburgh. Est. **$500,000.** CD 10/28—ENR 11/11.

Pa., Phila.—Paul A. Leibman, 1015 Wingohocking Ave., residential development Hasbrook Ave. and Devereaux St. **$322,000;** residential development, Howell St. and Oxford Ave., **$250,000,** separate contracts.

Pa., Phila.—Leverington Constr. Co., 332 Leverington Ave., residential development, Leverington Ave., separate contracts. **$250,000.**

Pa., Phila.—Tony Lospalluto, 6900 Oakley St., residential development, Shelbourne St and Longshore Ave., separate contracts. **$250,000.** James G. Durham, 34 S. 17 St., archt.

Pa., Radnor Twp. (Wayne P. O.)—Haverford Constr. Co., 843 Lancaster Ave., Bryn Mawr, residential development, Williams and Old Lancaster Rds., separate contracts. **$800,000.**

●Tex., Amarillo—First National Bank of Amarillo, Amarillo, bank and office, to St. Louis Bank Building and Equip. Co., 906 Sidney St., St. Louis, Mo. Approx. **$2,250,000.** CD 8/19—ENR 8/26.

Tex., Dallas—Bailey Johnson Co., c/o Rio Grande Bldg., 11 dwellings in Groveda and part of Oak Hill sub-division. Owner builds. Approx. **$885,500.** CD 1/26.

Tex., Dallas—C. H. Burton & S. D. Sprinkle, Lake June and Buckner Blvd., housing, Pioneer Ridge on Randall St. Owner builds. **$265,000.**

Tex., Dallas—M. C. Cole Co., Scyene Rd., Dallas, housing, Owner builds. **$550,000.** CD 1/26.

Tex., Dallas—Jefferson Hotel, 312 S. Houston St., remodeling, renovating, new 750 capacity auditorium, air-conditioning, etc. for existing Jefferson Hotel, to Cowdin Bros., 411 S. Haskell St., **$250,000.** Walter W. Cook & Assoc., 9003 Denton Dr., archt.

Tex., Houston—S. N. Adams & Assoc., 3712 Inwood St., 16 dwellings in Highland Village. Owner builds. **$335,500.** CD 1/31.

●**Tex., Houston**—L. F. Corrigan, Mercantile Bank Bldg., Dallas, shopping center, Humble and Westfield Rds., to Curlee Constr. Co., 6648 Main St., Approx. **$1,000,000.** Darrell P. Walling & Harry B. Grogan, 7616 Tipps St., archts. CD 3/18—ENR 3/25.

●**Tex., Houston**—Wm. G. Farrington, 1719 Sunset Blvd., approx. 450 high-type 1 and 2 story masonry dwellings, heating and air-conditioning sys. in 270 acre tract west of Post Oak and north of San Felipe Rd., Tanglewood sub-division, **$10,750,000,** CD 2/27/47—ENR 3/20/47; addnl. brick, masonry housing in Tanglewood sub-division, **$3,225,000,** CD 11/29—ENR 12/9. Owner builds.

Tex., San Antonio—E. J. Burke & Sons, 4220 S. Zarzamora St., 41 eight-unit apartments. Owner builds. Approx. **$800,000.** CD 1/12—ENR 1/27.

Tex., San Antonio—E. J. Burke & Sons, Inc., 4220 S. Zarzamora St., addnl. small type housing on Southside. Owner builds. **$600,000.** CD 1/12—ENR 1/27.

Tex., San Antonio — Lee & Orts, Gunter Bldg., 100 cottages, 25 acre subdivision, Basse Rd. and West Ave., day labor. **$450,000.** CD 1/12.

Tex., San Antonio—G. S. McCreless, 1102 Fair St., 75 dwellings on Southside. Owner builds. **$475,000.** CD 1/12—ENR 1/27.

Wash., Longview—F. W. Woolworth Co., Financial Center Bldg., San Francisco, Calif., 2 story, 100x120 ft., rein.-con. store, to Quoidbach Constr. Co., Longview. Est. **$300,000.** M. G. Strohmyer, c/o owner, ch. engr.

Wash., Seattle—Seattle-First National Bank, 2 and Cherry Sts., Zone 4, full floor at present mezzanine level in bank bldg., to Paul Nels Carlson Co., 903 Broadway. Est. **$350,000.** McClelland & Osterman, Skinner Bldg., Zone 1, archts.

Wis., Waupun—Waupun Memorial Assn., and School Sisters of St. Francis and St. Joseph's Convent, 5000 W. Chambers St., Milwaukee, Zone 10, 4 story, bsmnt. steel, brick, limestone hospital, concrete fdn. to Hutter Constr. Co., 134 Western Ave., Fond du Lac. Est. **$600,000.** Maguolo & Quick, 4908 Delmar St., St. Louis, Mo., archts. CD 5/27—ENR 6/10.

Wis., Whitefish Bay (P. O. Milwaukee)—Bay Lawn Apartment Co., 225 E. Fairmount Ave., Zone 11, design and construction 8 two story, 33x47 ft. brick veneer apartments, to Hersh Constr. & Eng. Co., 7401 N. Bridge Lane, Zone 11. Est. **$275,000.**

B. C., Vancouver—Dominion Constr. Co., Ltd., 150 W. First Ave., 5 story, rein.-con. office, Owner builds. **$300,000.** Awarded 1/11. C. Bentall, 150 W. First Ave., engr.

B. C., Vancouver—The Royal Trust Co., 626 W. Pender St., office addns., alterations, to Armstrong & Monteith Constr. Co. Ltd., 1449 Hornby St., **$250,000.** Awarded 1/11. Sharp & Thompson, Berwick, Pratt, 1155 W. Pender St., archts.

Ont., Toronto—H. Silverman, 22 Ridge Hill Rd., 6 story, bsmnt., 43x116 ft., rein.-con. office, to Fried Constr. Co., 70 Victoria St. Est. **$350,000.** CD 7/19—ENR 7/29.

Ont., Windsor—Bersch Homes Ltd., 801 Security Bldg., 80 brick veneer houses, cement block fdn., May Ave., own forces. Approx. **$640,000.**

Que., Montreal—M. Seigler Co., 4521 Park Ave., apartment units, to G. Daneau, 3720 Van Horne Ave., Est. **$840,000.** R. Fisher, 3474 Park Ave., archt. H. Jasen, 1410 Guy St., engr.

INDUSTRIAL BUILDINGS

BIDS ASKED

February 8

●**Ont., Hamilton**—PLANT—Prack & Prack, archts., 310 Main St., 1 story, 120x520 ft. and 1 story, 17x150 ft., rein.-con. brick plant, Beach Rd., for Canadian Westinghouse Co. Ltd., 286 Sanford Ave. $1,000,000. CD 12/13—ENR 12/23.

After February 10

S. C., Camden — TERMINAL—George D. Brown, c/o owner, archt., 60 x 80 ft. cinder block terminal for Atlantic Greyhound Corp., Kanawaha Valley Bldg., Charleston, W. Va. $75,000.

February 15

Tex., Lubbock—WAREHOUSE—Wm. Cameron Lumber Co., 2729 S. Lamar St., Dallas, masonry, brick warehouse, concrete slab fdn. $75,000-$90,000. Grayson Gill, 1913 San Jacinto St., Dallas, archt.

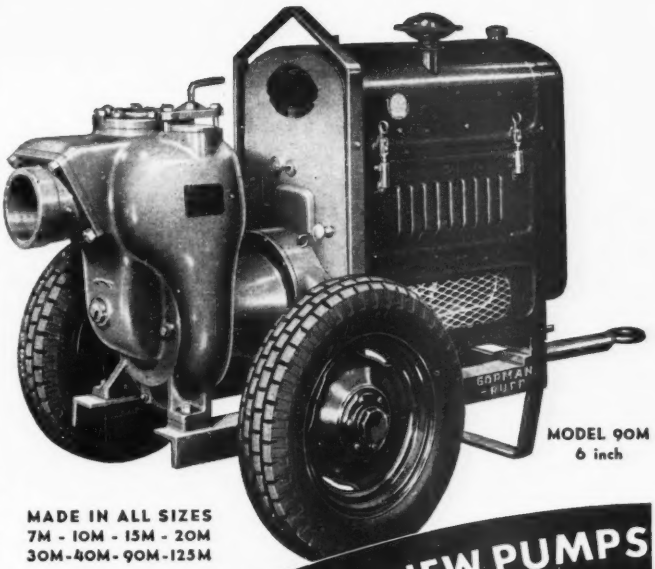
●**W. Va., Clarksburg** — WAREHOUSE and SHOP—Hope Natural Gas Co., 445 Main St., 1 and 2 story, 100 x 150 ft. brick, tile, steel, concrete warehouse and shop, Route 50. $1,000,000. Frank McEntee, Goff Bldg., engr. CD 4/16—ENR 4/29.

About April 15

Tenn., Nashville — BAKERY — American Bread Co., c/o Marr & Holman, archts., Stahlman Bldg., bakery plant. Approx. $100,000. CD 3/22/48—ENR 4/1/48.

Bids Asked

Pa., Reading—MOTOR TRUCK BRANCH—International Harvester Co., 180 N. Michigan Ave., Chicago, Ill., motor truck sub-branch. $175,000. W. E. Ray, c/o owner, engr.



MODEL 90M
6 inch

MADE IN ALL SIZES
7M - 10M - 15M - 20M
30M-40M- 90M-125M

GORMAN-RUPP'S NEW PUMPS

CHALLENGE ANY PUMP TO MATCH THEIR PERFORMANCE

With a new complete line of Contractors' Pumps, Gorman-Rupp has topped their own past high record of performance with a better pump --

-- QUICKEST PRIMING
-- HIGHEST PRIMING
-- PUMPS MORE DIRTY WATER

Compare them for priming speed:

The new Model 15M (3") primes at 25 ft. suction lift in 61 seconds.

The new Model 90M (6") primes at 25 ft. suction lift in 44 seconds.

And the Gorman-Rupp is still the most simple pump --

No ports, no valves, no clean-out plates, nothing to cause stoppages.

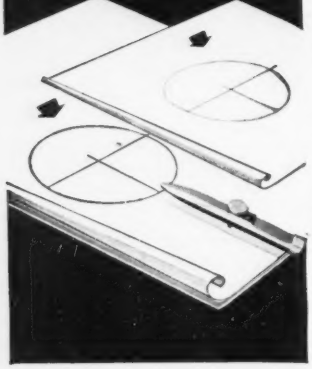
Write for the new Contractor's Bulletin 8-CP-11

THE GORMAN-RUPP *Guarantee*

Our distributor's are authorized to put a Gorman-Rupp Contractor's Pump on any pumping job, anytime, anywhere, alongside any other make pump, size for size. The Gorman-Rupp pump is guaranteed to pump more dirty water, more hours, using less gasoline, to prime quicker and at higher suction lifts than any other self-priming pump. If it isn't the best all around pump, our distributor will accept the return of the Gorman-Rupp pump and pay the user any installation expense incurred.

THE GORMAN-RUPP COMPANY
MANSFIELD, OHIO

Tracing cloth that defies time



● The renown of Imperial as the finest in Tracing Cloth goes back well over half a century. Draftsmen all over the world prefer it for the uniformity of its high transparency and ink-taking surface and the superb quality of its cloth foundation.

Imperial takes erasures readily, without damage. It gives sharp contrasting prints of even the finest lines. Drawings made on Imperial over fifty years ago are still as good as ever, neither brittle nor opaque.

If you like a duller surface, for clear, hard pencil lines, try Imperial Pencil Tracing Cloth. It is good for ink as well.

IMPERIAL TRACING CLOTH

SOLD BY LEADING STATIONERY AND DRAWING MATERIAL DEALERS EVERYWHERE

Tex., Longview—POWER PLANT—Southwestern Gas & Electric Co., 428 Travis St., Shreveport, La., (1st unit) power plant. $185,000. Sargent & Lundy, 140 S. Dearborn St., Chicago, Ill., engrs. CD 10/8/47—ENR 11/6/47.

SOON LETS CONTRACT

Ala., Birmingham — PLANT — Crawford Johnson Co., Inc., c/o George P. Turner, archt., American Life Bldg., soon lets contract bottling plant alterations. CD 1/27.

Fla., Miami—WAREHOUSE, etc.—John F. & A. Thompson, c/o Thomas J. Kelley, archts., 772 S. W. 47 Ave., soon let contract warehouse and office.

Ga., Columbus — MILL—Swift Spinning Mills, c/o Robert & Co., assoc., archts., 96 Poplar St., Atlanta, soon lets contract mill addn. and constr. Warehouse 6, Over $75,000. CD 8/12—ENR 8/26.

Mass., Pittsfield—PLANT—General Electric Co., Pittsfield, soon lets contract 1 story, 150x285 ft., steel Bldg. 12-Y, Over $68,000. Charles T. Main, Inc., 80 Federal St., Boston, engr.

Mass., Norwood — PLANT — Bird & Sons, Inc., East Walpole, soon lets contract 1 and 2 story, 30x270 ft., steel, wood plant Bldg. F. B. 12 addn., Over $68,000. Conrad & Young, Inc., 33 Union St., East Walpole, engr.

O., Cincinnati—WAREHOUSE etc.—Abbott Laboratories, Sheridan and 14 Sts. N., Chicago, Ill., soon lets contract warehouse and office, $300,000. H. N. Hermann & Assoc., 701 Enquirer Bldg., engrs. and archts. CD 10/26—ENR 11/4.

Ore., Portland — AUTOMOBILE BLDG. — Lloyd Corp., 720 N. E. 12 St., soon lets contract 160x190 ft., rein.-con. automobile bldg. N. E. Williams and Multnomah Sts. Burns Bear & McNeil, 3604 N. E. Broadway, archts. CD 12/2—ENR 12/9.

Pa., Huntingdon—RECEIVING STATION—Supplee-Wills-Jones Milk Co., 1523 N. 26 St., Phila., soon lets contract country receiving station. $100,000. The Ballinger Co., 121 N. Broad St., Phila., archt.

Pa., Pittsburgh — LABORATORY — Mine Safety Appliances Co., 201 N. Braddock Ave., soon lets contract 3 story, brick, steel laboratory, Penn and Braddock Aves. $500,000. Prack & Prack, 119 Federal St., archts.

Pa., West Mifflin — PLANT — Westinghouse Electric Corp., Union Bank Bldg., Pittsburgh, soon lets contract atomic research plant for marine power, altering bldgs. at Bettis Airport. $100,000.

Tenn., Athens — PLANT — Mayfield Creamery, c/o Selmon T. Franklin, archt., 421 Poplar St., Chattanooga, soon lets contract dairy plant. CD 1/26.

Tex., Beaumont—SUBSTATION, etc.—Bethlehem Steel Corp., c/o R. F. Hoffield, purch. agt., Island Park, Beaumont, soon lets contract 37x500 ft. steel piling, concrete deck mooring pier and sub-station. $300,000. Harder, Barbato & Ciampa, 90 West St., New York, N. Y. engrs. CD 12/30/47—ENR 1/8/48.

Tex., Houston—PLANT—Natural Gas Odorizing Co., 7629 Wallisville Rd., soon let contract brick veneer, concrete slab fdn., air-conditioned plant, $75,000. Lloyd & Morgan, 4605 Montrose Blvd., engr.

Tex., Sherman—BAKERY—Sherman Industries Foundation, Sherman, soon lets contract 2 story, 90x150 ft., brick, structural steel bakery. $200,000. J. N. McCammon, 312 S. St. Paul St., Dallas, archt.

S. C., Orangeburg — PLANT—G. Thomas Harmon, archt., 3350 Millwood Ave., Columbia, soon lets contract, garment plant for Paintsel Fashions, Inc., Orangeburg.

LOW BIDDERS

●**Tenn., Nashville** — PRINTING PLANT — Methodist Publishing House, 810 Broad St., Jan. 18, printing plant addn., from R. C. Mathews, Inc., 3rd Natl. Bank Bldg., $1,107,871. CD 1/17—ENR 1/20.

CONTRACTS AWARDED

Calif., San Francisco—SUPPLY HOUSE—Graybar Electric Co., 190 9 St., 1 story, frame supply house, to Cahill Brothers, 206 Sansome St. Est. $340,000. Felix H. Spitzer, 204 Sacramento St., engr.

Calif., San Francisco — FACTORY — Julius Harband, c/o Theo. Ruegg, archt., 617 Montgomery St., factory, Folson and Beale Sts., to W. C. Akard, 225 Cervantes Blvd. Est. over $68,000. Hyman Rosentahl, 617 Montgomery St., engr.

Calif., San Francisco—PLANT, etc.—U. S. Plywood Corp., Bayshore and Army Sts., plant and office, to L. & E. Emanuel, 1485 Bayshore Blvd. Est. over $70,000.

Conn., Bridgeport — PLANT — Buckley Brothers, Inc., Joseph J. Buckley, pres., 1 Seaview Ave., oil plant, oil facilities, incl. tanks, distr. facilities, heat preparation plant, Seaview Ave., separate contracts. $750,000.

Conn., Bridgeport—FACTORY—General Supply Co., 113 Front St., 1 story, 60 x 155 ft., rein.-con. factory, North Ave. and Twitchell St., to Pascone Constr. Co., Inc., 115 Front St. Est. $68,000.

Conn., East Hartford—FACTORY—Sanitary Paper Mills, Inc., 2 Forbes St., 1 story, 65 x 120 ft., brick, steel factory addn., Forbes St., to Bartlett-Brainard Co., 103 Woodbine St. Hartford. Est. $68,000.

Fla., Zellwood—PLANT—Seaboard Airline R.R. Co., W. D. Simpson, ch. engr., S.A.L. R.R. Bldg., Norfolk 16, Va., precooling plant, water sys. etc., to James F. Wellman, Winter Park. Bids 1/12. CD 1/6—ENR 1/13.

Ga., Atlanta—WAREHOUSE—American Oil Co., c/o contractor, 23,000 sq. ft. warehouse, to Sharpe & Bickerstaff, 590 Kennesaw Ave. N. E. Est. Approx. $68,000.

●**Ga., Atlanta**—PLANT—Chrysler Corp., c/o Robert & Co., Assocs., archts., 96 Poplar St., 144,000 sq. ft. motor parts mfg. plant, to Virginia Eng. Co., Newport News. Est. $1,000,000. Bids 1/17. CD 1/17—ENR 1/13.

Ga., Atlanta — WAREHOUSE — Owner, c/o W. D. Whigham, 1146-86 Briarcliff Rd., 108,000 sq. ft. warehouse. Owner bldg. Over $100,000. Moscowitz, Willner & Millkey, 1000 Peachtree St. N. E., archts.

Ga., Thomaston—BLEACHERY—Thomaston Mills, Thomaston, bleachery addn., to A. K. Adams, 542 Plum St. N. W., Atlanta, Est. over $75,000. Bids 1/19. CD 1/4—ENR 1/13.

Ill., Chicago—PLANT—Kraft Foods Co., 500 N. Peshtigo St., 1 story, brick, steel concrete plant, to Campbell, Lowrie & Lautermilch, 400 W. Madison St. Est. over $100,000. Awarded 1/19.

Ill., Chicago—WAREHOUSES—Pullman Co., 222 N. Bank St., two 1 story, 145 x 201 ft. and 110 x 210 ft. warehouses, to Sumner S. Sollitt Co., 307 N. Michigan Ave. Est. $150,000. F. Stanton, 307 N. Michigan Ave., archt.

Ill., North Chicago — FACTORY — Goelitz Confectionery Co., 1501 Morrow Ave., factory addn., to Simpson Constr. Co., 1113 Hermitage Ave., Chicago. $250,000. Allan & Kelly, Architects & Builders Bldg., Indianapolis, Ind., archts.

Ind., Modoc — SUBSTATION — Indiana Michigan Electric Co., 220 W. Colfax Ave. South Bend, substation. Owner builds $190,000.

Ind., Selma—SUBSTATION—Indiana Michigan Electric Co., 220 W. Colfax Ave. South Bend, substation. Owner builds. $190,000.

Ia., Cedar Rapids — BUS BARN — Cedar Rapids City Lines, 716 First St. S. E., bus barn, to Roldon F. Dressler, 11 S. LaSalle St., Chicago, Ill., $240,000. Howard R. Green Co., 417 First Ave. S., engr. and archt.

●**La., Shreveport**—MILL—Bird Roofing Co., c/o contractor, felt mill addn., to Rust Eng. Co., Clark Bldg., Pittsburgh, Pa. Est. $1,000,000.

La., New Orleans—WAREHOUSE—Dupuy Storage & Forwarding Corp., 400 S. Peters St., warehouse, Owner builds. Est. Over $75,000. H. Van Rappard, Balter Bldg., archt.

●**Md., Dundalk**—GENERATING STATION—Consolidated Gas & Electric Light & Power Co., Lexington Bldg., Baltimore, 58 x 90 x 107 ft. and 74 x 85 x 118 ft. generating station, separate contracts, $1,268,000.

●**Minn., Minneapolis** — POWER HOUSE—Northern States Power Co., A. S. Keely, constr. supt. 15 S. 5 St., superstructure, steel, brick power house addn., 25 x 52 x 53 ft. stair tower, 62 x 91 x 111 ft. precipitator bldg., 73 x 103 x 107 ft. boiler room, 12 x 37 ft. and 16 x 17 ft. bldgs. 2832-2910 Marshall St. N. E. Owner builds. $1,200,000. J. A. York, c/o owner, archt. CD 2/12/47—ENR 3/6/47.

Minn., Twin Falls — POWER PLANT—Dairyland Power Co-operative, La Crosse, Wis., diesel power plant, Prof. Wis. 64 G. T. La Crosse, to Joseph A. Bass Co., 332 Sexton Bldg., Minneapolis. $167,900. Ellerbe & Co., E. 505 First National Bank Bldg., St. Paul, archts. and engrs. CD 12/29—ENR 1/8.

Mo., St. Louis—SHOP—E. F. Eudaley, 5843 Easton Ave., St. Louis, Zone 12, 1 story, 60 x 100 ft., brick, concrete, repair shop, 5843 Easton Ave., to Harry Goldberg, 601 N. Washington Blvd., Zone 5, Elmer J. Wels, 2237 St. Louis Ave., archt.

Neb., Beatrice — GRINDING MILL, etc.—O. A. Cooper Co., Humboldt, grinding mill and warehouse, to Hogenson Constr. Co., 402 Corn Exchange, Minneapolis, Minn. Est. $75,000.

N. J., Neptune—BOTTLING PLANT, etc.—Seven-Up Bottling Co., 817 Carpenter St., Phila., Pa., 2 story, 20,000 sq. ft. brick, stone bottling plant and offices, separate contracts. $250,000. John E. Sindoni, 2245 S. 21 St., Phila., Pa., archt.

N. J., Pennsauken—INDUSTRIAL—Owner, c/o George E. Edkins, archt., 22 Capitol St., Oaklyn, Pa., industrial bldg. addn., separate contracts. Over $68,000.

N. J., Trenton—MANUFACTURING—Scammell China Co., 300 S Ave., 2 story, 48x148 ft., brick mfg. bldg. and office, separate contracts. Over $68,000. Nelson W. Whitehead, 26 W. Lafayette St., archt.

N. C., Greensboro—WAREHOUSE, etc.—Thomas & Howard Co., c/o contractor, warehouse and office, to J. H. Swain Lumber Co., Greensboro. Est $75,000.

Pa., Creighton—BENDING TUBE—Pittsburgh Plate Glass Co., Grant Bldg., Pittsburgh, 2 story, approx. 100 x 400 ft. steel bending tube bldg., to The Austin Co., Union Trust Bldg., Pittsburgh. Est. $500,000.

Pa., Phila.—GARAGE, etc.—Becker Mills Co., 4155 Frankford Ave., 2 story, 65x147 ft., brick, steel, concrete garage, repair shop and

maintenance bldg. to Leonard Shaffer, 926 Walnut St., over **$68,000.** CD 1/6—ENR 1/13.

Pa., Phila.—PLANT—Cooklyn Milk Co., 3228 Dickinson St., 2 story, 64 x 164 ft., brick, steel milk processing and ice cream plant, to Charles H. Wurster, 3617 N. Broad St. **$200,000.** J. Pollard, c/o owner, ch. engr.

Pa., Phila.—MANUFACTURING—George D. Ellis & Sons, Inc., 309 N. 3 St., 1 story, 75,000 sq. ft., brick, concrete block mfg. bldg., to William F. Lotz, 4700 Frankford Ave., over **$68,000.** CD 11/17—ENR 12/16.

Pa., Phila. — MANUFACTURING — Metropolitan Printing Co., c/o Michaelson & Fedeli, archts., 1612 Market St., mfg. bldg. alterations, addns., to Lawrence H. Roberts, 32 and Morse Sts., **$68,000.**

Pa., Phila. — LABORATORY — Owner c/o United Engineers & Constructors, Inc., engr., 1401 Arch St., laboratory and test bldgs., Island Rd. and Reading R.R., separate contracts. Over **$68,000.**

Pa., Phila.—STORAGE—Powers & Co., 5913 Woodland Ave., 1 story, 192 x 291 ft., brick storage bldg., separate contracts. Over **$125,000.**

Pa., Pittsburgh — MANUFACTURING — Stimple & Ward Co., 518 Sandusky St., 4 story brick mfg. bldg., Sandusky St., to The Trimble Co., 1719 Penna Ave. Est. **$80,000.**

Pa., Watsontown — PLANT—Jasper Wood Products Co., Watsontown, two 1 story, 70 x 160 ft. and 70 x 200 ft. concrete block mfg. plant, separate contracts. **$150,000.**

Tenn., Kingsport — WAREHOUSE — Kingsport Press, Inc., c/o contractor, warehouse, to Armstrong Constr. Co., Kingsport. **$342,000.** Bids 1/11. CD 1/12—ENR 1/20.

Tenn., Paris—PLANT—Paris Industries, c/o contractor, mfg. plant, to Martindale Bros., Murfreesboro. Est. over **$75,000.**

Wash., Seattle — WAREHOUSE—Pioneer Fruit Co., 1021 Western Ave., 1 story, 90 x 250 ft. concrete warehouse, to John H. Selden Constr. Co., 228 9 Ave. N. Est. **$150,000.** S. Ivarsson, Skinner Bldg., Zone 1, archt.

Wis., Green Bay—PLANT—Standard Oil Co., 417 Pine St., 1 story, 72 x 121 ft., steel, brick, bulk plant addn. concrete fdn., to J. C. Basten, Green Bay. Reno A. Niles, 925 Wesley St., Evanston, Ill., engr.

Wis., La Crosse—FACTORY—Trane Co., 206 Cameron Ave., 1 story, 45 x 200 ft., brick, factory addn., concrete fdn. to Peter Nelson & Son, Inc., 115 S. 4 St.

Wis., Milwaukee—STOCK HOUSE—Joseph Schlitz Brewing Co., 235 W. Galena St., Zone 12, 10 story, 108 x 219 ft., steel, brick, steel piles stock house, fermenting cellars, concrete fdn., to Siesel Constr. Co., 514 E. Ogden Ave. Zone 2. CD 12/31—ENR 1/6.

Alta., Edmonton—WAREHOUSE—Dominion Construction Co., Ltd., 150 W. First St., Vancouver, B. C., 1 story, 133x150 ft., brick warehouse. Owner builds. **$200,000.**

Ont., Toronto—FACTORY—Armstrong Ltd., 115 Dupont St., 1 story, 60x120 ft. and 60x60 ft., concrete, steel, brick factory, to Bennett-Pratt Ltd., 30 W. Bloor St. Est. **$100,000.** Bids 1/5. CD 12/27—ENR 12/30.

Ont., Toronto—FACTORY—Essex Ltd., 15 Hamerden Crescent, 2 story basmt., concrete, steel, brick factory. Owner builds. **$75,000.** CD 3/9/48.

Ont., Toronto—FACTORY—Patterson Foundry & Machine Co. of Canada, Ltd., 624 Mount Pleasant Rd., 100x200 ft. steel, concrete, brick factory, to F. McLachean, Ltd., 195 Fairbank Ave. Est. **$100,000.** R. St. Perre, 1168 W. Ste. Catherine St., Montreal, Que., engr. CD 1/14.

Que., Sorel—SERVICE—Titanium Corp. of Canada, 1522 W. Sherbrooke St., Montreal, smelter service bldgs., administrative bldgs. for ore refinery, to Fraser Brace Engrs. Co. Ltd., 360 W. St. James St., Montreal. Est. **$300,000.** Surveyor & Assoc., 1235 McGill College Ave., Montreal, consult engrs.

UNCLASSIFIED

BIDS ASKED

February

Missouri—RURAL DISTRIBUTION LINES—Citizens Electric Corp., Ste. Genevieve, labor only, 70 mi. 69 KV and 9 mi. 34 KV rural distr. lines, Proj. Missouri 58 C Ste. Genevieve. Bids Jan. 15, cancelled. Michael Drazen & Assoc., 4903 Delmar Blvd., St. Louis, Zone 8, engrs. CD 10/13—ENR 10/21.

February 7

Pa., Phila.—TRACK RELOCATION—Dpt. P. Wks., City Hall Annex, railroad track relocation. Over $25,000. A Zane Hoffman, c/o owner, ch. engr.

February 8

N. Y., St. George—ELECTRICAL FACILITIES—Comr. Marine & Aviation, Pier A, North River, foot of Battery Pl., New York, Zone 7, electrical facilities for terminal, reconstructing terminal and approaches at St. George Ferry Terminal, Contr. 2597-R. Plans deposit $25. Extended date. CD 1/19—ENR 1/20.

February 9

Missouri — SITE DEVELOPMENT — Northeast Missouri Electric Power Co-operative, Palmyra, site development, incl. plant site, railroad siding, embankments, road, parking apron, drainage sys., etc., South River Plant, Stanley Eng. Co., Hershey Bldg., Muscatine, Ia., engr. C. 2/27—ENR 3/18.

FOUNDATIONS

PRETEST UNDERPINNING
CONCRETE-STEEL PILES
MASS CONCRETE CONSTRUCTION
HEAVY SHORING
DRILLED-IN CAISSONS

Send for catalogs descriptive of the latest foundation types and methods

SPENCER, WHITE & PRENTIS, INC.
10 EAST 40th ST. NEW YORK 16, N. Y.
602 HAMMOND BLDG. DETROIT 26, MICH.

AMONG WATER WORKS MEN...

THE
ELLIS PIPE CUTTER
is *Best*
FOR CUTTING
LARGE SIZES
OF PIPE

No. 01 Cuts Pipe 4" to 8" | No. 1 Cuts Pipe 4" to 12"

IMMEDIATE DELIVERY NOW
ON ELLIS PIPE CUTTERS

• WRITE FOR CIRCULAR AND PRICE LIST

ELLIS & FORD MFG. CO.
FERNDALE 20, MICH.

Electroline —FIEGE
WIRE ROPE
CONNECTORS

The LAST WORD *in*
SAFETY
SPEED
SAVINGS

No heat, acids or complicated equipment required for installation. Ordinary mechanic's tools do the job, safely, even in chemical plants, powder plants and mines, where other methods would be prohibited. And they are safe to use, because they have the highest holding strength of any known wire rope or strand connectors. They assure *savings in installation* because unskilled labor can do the job easily and quickly; *savings in use* because they prolong wire rope life by damping vibration and overcoming rope fatigue at entrance to fitting . . . and because they are reclaimable.

Note ease of installation →

Send for new descriptive catalog

Simply slip the sleeve over the cable, spread the strands, insert and drive in the plug then apply the socket. See what a solid and permanent joint you have by looking at it through the inspection hole put there for the purpose.

Electroline Company
1121 S. LA SALLE ST., CHICAGO 9, ILL.

GRIFFIN

WELLPOINT SYSTEMS

JETTING PUMPS

Distributors
GRIFFIN ENGINEERING CORP.
2016 E. Adams St.,
JACKSONVILLE, FLA.

GRIFFIN EQUIPMENT CO., INC.
548 Indiana Street,
HAMMOND, INDIANA

GRIFFIN WELLPOINT CORP.
881 EAST 141st ST. • NEW YORK 54, N. Y.
Phones: MIlrose 5-7704-5-6

NEW! Heating Unit for Winter Jobs

- Ideal for Concrete Work
- Quickly Thaws Out Materials
- Warms Air for Paint, Plaster

BEHLEN HEAT BLOWER

$407
FOB-Columbus, Nebr.

A sturdy, dependable heating plant. Has many construction uses. Recommended for concrete work in low temperatures. Warms aggregate at batching plant; prevents freezing concrete while setting. Just the thing for drying and curing plaster or paint and other such jobs. Preheats machinery. Burns only 1 to 6 gals. distillate or kerosene an hour; furnishes up to 700,000 B.T.U.'s direct heat per hour. Built-in fan delivers up to 6000 CFM at 5 inches water pressure up to 225° F output. Gasoline or electric motor furnished if desired. Adjustable outlet pipe is removable for adapting to fit job. Mounted on skids. Used on Federal and private construction. Almost 3,000 in use on farms dehydrating corn. Beat cold weather delays . . . write, wire for full information . . .

BEHLEN MANUFACTURING COMPANY
DEPT. 3 *COLUMBUS, NEBR.*

February 10

Ind., Fort Wayne—SWIMMING POOL—Bd. Park Comrs., 336 E. Berry St., swiming pool, incl. bath house, water purification sys., McMillen Park, $75,000. Plans deposit $20. Ackley, Bradley & Day, Swickley, Pa., archts. CD 1/5—ENR 1/13.

New Mexico — RURAL DISTRIBUTION LINES—Continental Divide Electric Co-operative, Lon Adams, mgr., Gallup, 176 mi. rural distr. lines and constructing substation, city of Gallup. Plans deposit $25. Southwest Engineers, Transit Tower, San Antonio, Tex., engrs. and archts. CD 11/26/47—ENR 12/11/47.

February 11

New York—CONTACT RAIL—Bd. Transportation, 250 Hudson St., New York, Zone 13, installing tracks, contact rail and incidental work, incl. furnishing materials for Route 108, Sect. 12, Contr. T-73, Queens Co. CD 8/31/45—ENR 9/20/45.

February 16

California—TRAFFIC SIGNALS, etc.—State Div. Hys., Pub. Wks. Bldg., Sacramento, furnishing, installing traffic signal and hy. lighting sys., between 47 St. and Girrard Blvd., Richmond, Contra Costa Co. G. T. McCoy, state hy. engr.

†**Md., Cumberland**—RADAR TOWER—Pub. Wks. Office, Fifth Naval Dist., Norfolk, Zone 11, Va., radar tower at Naval Reserve Training Center, Spec. 21660.

†**Va., Richmond** — RADAR TOWER — Pub. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, radar tower at Naval Reserve Training Center, Spec. 21662.

†**Va., Staunton** — RADAR TOWER — Pub. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, radar tower at Naval Reserve Training Center, Spec. 21661. Plans deposit $10.

†**W. Va., South Charleston**—RADAR TOWER—Pub. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk 11, Va., radar tower at Naval Reserve Training Center, Spec. 20327.

February 21

†**Ark., Hot Springs** — COOLING SYSTEM, etc.—National Park Service, Dpt. Interior, Region 3, Santa Fe, N. M., cooling and distr. sys., incl. 100,000 gal. rein.-con. reservr., 12 in. c. i. pipeline, pump house, appurtenances, etc., at Hot Springs National Park, $50,000. CD 11/24—ENR 12/2, under CA.

February 24

†**Arizona-Nevada** — TRANSFORMER OIL STORAGE TANKS—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. shipping point or f.o.b. cars Prescott, 2 horizontal 20,000 gal. welded-plate-steel transformer oil storage tanks for Prescott substation, Davis Dam Proj., Spec. 2544. L. N. McClellan, ch. engr.

†**Ill., Rock Island**—SPRINKLER SYSTEM—U. S. Eng., Clock Tower Bldg., automatic sprinkler sys., Clock Tower Bldg., Motor Shop and Engineer Depot Bldg., Arsenal Island, Rock Island, Serial No. Eng. 11-117-49-54.

About March 1

Tenn., Knoxville—BASEBALL STADIUM—City, Caswell Park Baseball Stadium. $400,000. John W. Bush, city engr. CD 1/12/48—ENR 1/22/48.

About March 8

Missouri and Iowa—RURAL DISTRIBUTION LINES—Nodaway-Worth Electric Co-operative, c/o George R. McGuire, Maryville, Mo., 458 mi. rural distr. lines, etc. Nodaway, Worth, Gentry, Holt and Harrison Counties, Missouri, and Taylor, Page and Ringgold Counties, Iowa, $450,000. Frank Horton & Co., Lamar, Mo., engrs. CD 12/31—ENR 1/20.

About March 15

†**Nebraska** — RAILROAD RELOCATION — U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., relocation C. B. and Q. R. R., Oxford Branch in Harland and Franklin Counties, incl. clearing, grubbing, earthwork, bridges and other drainage structures, track laying and ballasting, crossings, right-of-way fence, markers and signs, etc. Announcement No. Eng. 23-028-49-136.

March 15

†**Arizona and Nevada** — TRANSMISSION LINE—Bureau Reclamation, Dpt. Interior, Parker Dam, Calif., constr. Coolidge E. D. No. 5, 115 kilovolt transmission line, Davis Dam Proj., near Eloy, Ariz., Spec. 2545. L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr.

Bids Asked

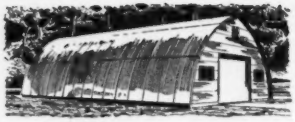
Ont., Goderich — ARENA — Charles Gillin, archt., 284 Dundas St., London, steel frame for arena, for Municipality. CD 5/11/47—ENR 5/15/47.

LOW BIDDERS

Ala., Trussville—GAS SYSTEM—City, Jan. 25, natural gas sys., from L. J. Wilder, 2301 N. 24 St., Birmingham, $297,825. CD 1/10.

La., Baton Rouge—SWIMMING POOls, etc. Recreation & Park Comn., East Baton Rouge Parish, 115 St. Louis St., Jan. 19, swimming pool and bath house, Brooks Park, from A. B. Broussard, 2937 Greenwood Dr., $91,852. CD 1/7—ENR 1/13.

†**Mass., Wakefield**—RIFLE RANGE—U. S. Eng., Bldg. 21, U. S. Naval Drydock, South Boston, Jan. 25, rifle range, Camp Curtis Guild, Serial No. Eng. 19-016-49-63, from A. V. Tourasi Co., Inc., 40 Court St., Boston, $77,970. CD 1/21.



Timberib
UTILITY BUILDINGS

The "Timberib 40" shown above is just one example of the many types of buildings so quickly and economically erected with Timberib Douglas Fir rafters. Ideal for warehouses, machine sheds, garages, work shops, farm and commercial buildings of all types. Glued laminated for strength and uniformity, these arches provide a nailable framework for wood or metal covering. Timberib arches form roof and sides in one piece making every foot of interior space available for use.

- ROOF TRUSSES
- STANDARD BRIDGES
- ARCHES AND BEAMS
- WAREHOUSES

Send for complete details

TIMBER
SAMP MAYER
STRUCTURES
INCORPORATED

P. O. Box 3782
PORTLAND 8, OREGON
Offices: New York, Chicago, San Francisco, Seattle, Spokane

"GUNITE" CONCRETE
(Since 1915)

FOR • STEEL PLATE LINING • STEEL ENCASEMENT • BUILDING NEW WALLS • LINING WATER RESERVOIRS, TUNNELS AND SEWERS • PLATE LINING OF STEEL STACKS, BUNKERS, DUCTS • REPAIR OF DISINTEGRATED CONCRETE AND MASONRY • CANAL, DITCH AND DRAIN LINING.

GUNITE CONCRETE & CONST. CO.
1301 Woodswether Rd., Kansas City 6, Mo.

District Branch Offices

R. N. Turner, Dist. Mgr., 228 No. LaSalle St., Chicago 1, Ill. B. H. Mueller, Dist. Mgr., 6625 Delmar Blvd., University City, (St. Louis), Mo. Philip D. Barnard, Dist. Mgr., 2036 Addison, Houston 5, Tex.

Branch Offices: Denver, Dallas, New Orleans

Missouri — RIGHT-OF-WAY CLEARING — Cuivre River Electric Co-operative, J. W. Schaper, pres., Troy, rejected bids Jan. 12, 200 units clearing right-of-way along rural distr. line, Lincoln, St. Charles and Warren Counties, Proj. Missouri 57AB Lincoln Sect. IV. CD 1/6.

Missouri—RURAL DISTRIBUTION LINES, etc.—Cuivre River Electric Co-operative, J. W. Schaper, pres., Troy, Jan. 19, labor, 271.041 mi. rural distr. lines, Lincoln St. Charles and Warren Counties, also 200 units, right-of-way clearing, Proj. Missouri 57AB Lincoln, Sect. IV, from Cater Constr. Co., 1016 Baltimore Ave., Kansas City, Mo., $150,116. CD 1/6—ENR 1/13.

Wash., Seattle—FIELD HOUSE—Bd. Park Comrs., 2334 4 Ave., Zone 1, Jan. 21, 2 story, rein.-con. fieldhouse at West Queen Anne Playfield, from Miller & Poston, 1206 19 Ave. N., $379,287. Est. $385,000. CD 1/11.

CONTRACTS AWARDED

●**Calif., Richmond** — GAS HOLDER — Pacific Gas & Electric Co., 245 Market St., San Francisco, gas holder, incl. gigantic cylinder inside stationary steel framework 379 ft. high, compressor station, cooling tower, etc. Owner builds, $4,900,000.

Calif., San Francisco—TELEVISION STATION—KNBC Broadcasting Station, 720 Tay-

lor St., and KRON Broadcasting Station, 5 and Mission Sts., 1 story, rein.-con. FM television station to Barrett & Hilp, 918 Harrison St., San Francisco, Est. **$125,000.** Irvin Wm. Goldstine, 821 Market St., archt. Ellison & King, 1045 Sansome St., engrs.

Fla., Fort Lauderdale—BATHHOUSE, etc.—Hugh-Taylor-Birch State Park, 3011 N. E. Sunrise Blvd., bathhouse and concessions bldg. Owner builds. **$85,000.**

Ky., Cynthiana—SWIMMING POOL—Harrison Co. Recreation Bd., Cythiana, swimming pool, to Clarke, Stewart & Wood, 326 Georgetown St., Lexington, **$50,000.** Bids 12/22. CD 12/14.

Md., Baltimore — PIER EXTENSION — Northern Central R. R., Broad St. Station, Phila., Pa., 2 deck structures, single deck structure, 170x223 ft. gypsum, steel, concrete deck and piling Pier 1 extens., 1900-2000 S. Clinton St., Canton, Baltimore, to McLean Contg. Co., 1391 Fidelity Bldg., **$830,000.** Awarded 1/20. E. R. Gutsche, c/o owner, engr.

Miss., Greenville—MOTOR COURT—J. S. Lowry & Sons, c/o contractor, motor court, to Virden Lumber & Steel Co., Greenville. Est. over **$60,000.**

Nebraska—RURAL DISTRIBUTION LINES—Panhandle Rural Electric Membership Assn., Alliance, 73.9 mi. rural distr. lines, Garden, Grant and Sheridan Counties, to Cater Electrical Constr. Co., 1016 Baltimore St., Kansas City, Mo., **$78,477.** Bids 1/12. CD 12/20—ENR 12/30.

●**Texas**—OIL PIPELINE—Atlantic Pipe Line Co., Magnolia Bldg., Dallas, 382 mi. 16 in. welded joint crude oil pipeline carrier between Block 31 near Crane Field, to near Refugio, Crane Co., to A. C. Holder, Crane. Approx. **$9,000,000.** Est. $9,500,000. CD 10/26—ENR 11/4.

Texas—GAS PIPELINE—Lone Star Gas Co., 1915 Wood St., Dallas, 10 mi. 12- to 20-in. high pressure gasmains in Main Garland Rd. to Mockingbird Lane, Dallas, **Dallas Co.,** own forces. **$450,000.** CD 10/5—ENR 10/7.

Ont., Orillia — POWER DEVELOPMENT — Orillia Water, Light & Power Comn., 25 West St. N., 800 ft. dam and 30x40 ft. power house, South Muskoka River, to Aiken & McLachlan, Ltd., 7 Hartzell St., St. Catherines. Approx. **$850,000.** L. G. McNeice, c/o owner, engr. CD 12/21—ENR 12/30.

P. E. I., Fishing Cove (Cape Egmont)—WHARF, etc.—Dpt. P. Wks., Ottawa, Ont., wharf and breakwater, to Wallace Noze, A. Raynor, W. Bagole & J. Noze, Ellerslie. Approx. **$81,000.** CD 9/29—ENR 10/7.

Que., Grande Vallee—WHARF—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., deep water wharf, to Capt. E. Jourdain, G. Russell and L. Laundry, Cap Chat. Approx. **$102,000.** Bids 12/15. CD 11/29—ENR 12/9.

PROPOSED PROJECTS

WATER SUPPLY

Mass., Topsfield—Town Bd. Water Comrs., Topsfield, plans by Clinton P. Goodwin, 25 Washington Sq., Haverhill, water supply sys., well. **$225,000.**

Mich., Grand Haven—City, City Hall, WW sys. **$750,000.** Consoer Townsend & Assoc., 351 E. Ohio St., Chicago, Ill., engrs. CD 9/9/47—ENR 9/18/47.

Wash., Lynden—City, City Hall, filter plant, **$100,000;** wells, **$40,000.** Ed Knittel, city engr.

Ont., New Liskeard — Municipality, 6 in. watermain, in downtown area, storage tank addn. **$100,000.**

Ont., Paris—Municipality, WW sys. imprvs., booster station, watermains, **$176,000.** Gore & Storrie, 1130 Bay St., Toronto, engrs.

Que., Asbestos—Municipality, pump. station, filter and reservoir. **$100,000.** Z. Langlais, 106 Mountain Hill, Quebec City, engr. CD 9/10/47 ENR 9/18/47.

SEWERS, WASTE DISPOSAL

Calif., Los Angeles—Bd. Supervs. Los Angeles Co., Hall of Records, sanitary sewers in Rogart Ave., Baldwin Park, **$267,300;** sanitary sewers in Shreve Rd., Whittier, **$214,900.** C. E. Arnold, co. engr. and surv.

Ind., Hammond—Bd. Sanitary Comrs., City Hall, intercepting sewer under Little Calumet River, sewer to connect Whiting sewerage sys. with Robertsdale Plant, **$300,000.** Leo Besozzi, 314 Hammond Bldg., Hammond, consult. engr. CD 12/20/46—ENR 1/9/46.

Ont., Beamsville—Municipality, ratepayers vote against sewerage sys. **$240,000.** CD 1/4.

Ont., Port Weller—Municipality, St. Catherines, ratepayers approve sewage disposal plant, **$175,000.** Dineen & Assoc., 44 Holmes St., Brantford, engrs.

Ont., St. Catherines—Municipality, sewage disposal plant, at Port Weller, **$175,000.** Dineen, Phillips, & Robert, 44 Holmes St., Brantford, engrs.

Ont., Simcoe—Municipality, sewerage sys. **$150,000.**

Ont., Simcoe—Council & P. U. C., Harry Aitken, mayor, and H. Stalker, P. U. C., mgr., Simcoe, drying beds, sewer extens., force main from pump. station, **$200,000.** CD 9/5/44—ENR 2/21/44.

Que., La Tuque—Municipality, ratepayers approve sewers. **$160,000.** A. Gagnon, Town Hall, engr.

Que., Quebec City—Municipality, sewer in St. Sacrement Ave. **$205,000.** Ed Hamel, city engr.

BRIDGES

Man., Winnipeg—Municipality, bridge over Assiniboine River, Aubrey St. Over **$100,000.** W. D. Hurst, city engr. CD 10/20—ENR 10/28/43.

Quebec—Dpt. P. Wks., Quebec City.

South Stukely—66 ft. railway viaduct to replace viaduct under C. P. Railway, Rt. 1, near Waterloo. Approx. **$225,000.**

Que., La Conception—Dpt. P. Wks., Parliament Bldgs., Quebec City, bridge to replace structure on Montreal-Mont Laurier Hy., Approx. **$200,000.** O. Desjardins, c/o owner, engr. CD 8/6/47—ENR 8/14/47.

AIRPORTS AND AIRBASES

Man., Churchill—AIRPORT—Dominion Govt., Dpt. National Defense, Cartier Sq., Ottawa, Ont., plans by Royal Canadian Air Force, Dpt. National Defense, Cartier Sq., joint service airport imprvs. **$150,000.**

LATIN AMERICA

Brazil, Cabo Frio—Companhia Nacional de Alcalis S.A., Rio de Janeiro, plans alkali plant. **$300,000.**

Brazil, Sergipe—Industrias Quimicas Brasileires, Alcalines S. A., Rio de Janeiro, plans alkali plant. **$300,000.**

Brazil, Buenos Aires—Expreso Buenos Aires, c/o B. Lance, Buenos Aires, plans terminus constr. etc. at Calle Lima, Avenida 9 de Julio. **$250,000.**

Chile, Los Angeles—Republic of Chile, Santiago, plans sugar beet refinery. **$300,000.** Fomento Corp., Santiago, engr.

Chile, Santiago—Italian-Chilean Corp., Santiago, plans galvanized iron pipe mfg. plant. **$200,000.**

Chile, Santiago—Santiago Water Co., Santiago, plans WW sys. extens. **$300,000.**

Mexico, Armeria—Republic of Mexico, Mexico City, plans bridge in connection with Colima-Manzanillo Hy. **$300,000.** Dpt. Communications, Mexico City, engr.

Mexico, Mexico City—Guanos y Fertilizantes de Mexico, S. A. V. Carranza, 25 sexto piso, Mexico, D. F., plans fertilizers factory. **$350,-000.**

Mexico, Vera Cruz—Syndicate of Growers, c/o Ministry of Development, Mexico City, plans pineapple packing plant. **$200,000.**

Panama, Chitre — Municipality, water sys. **$300,000.** Ministry of Labour, Social Welfare & Public Health, Panama City, engr. CD 10/24/46—ENR 11/14/46.

PUBLIC BUILDINGS

Ala., Fort Payne—Dekalb Co., Fort Payne, plans by Sherlock Smith & Adams, 301 Washington Ave., Montgomery, courthouse and jail. **$350,000.**

Calif., Los Angeles—Bd. Supervs. Los Angeles Co., 501 Hall of Records, 100x200 ft., steel laundry bldg., Hondo, Spec. 992. **$100,000.** R. E. Shonerd, ch. mech. engr.

Calif., Los Angeles—Los Angeles Bd. Educ., 1323 S. San Pedro St., plans by A. S. Nibecker, Jr., 1425 S. San Pedro St., 42 emergency classroom units **$250,000.**

●**Calif., Los Angeles**—Bd. Regents, University of California, 405 Hilgard Ave., plans by Paul Robinson Hunter, 635½ S. La Brea St., arts bldg., **$1,000,000;** plans by Allison & Rible, 650 S. Grand Ave., engineering bldg., Unit B, Class A constr., **$750,000.** CD 8/24/44—ENR 9/7/44.

Calif., Oakland—Eden Hospital Dist., Eden Twp., c/o Alameda Co. Bd. Supervs., Courthouse, Oakland, plans by Douglas D. Stone & L. B. Mulloy, 619 California St., San Francisco, hospital. Over **$300,000.** Garthorne, Buonaccorsi & Murray, 1095 Market St., San Francisco, consult. engrs.

Conn., Milford—Town, Joseph A. Foran, supt. Schools, plans by Jesse James Hamblin, 1188 Main St., Bridgeport, 2 story, bsmnt., 13 room, brick, steel school and assembly hall, Pumpkin Delight Rd. **$325,000.**

Del., Wilmington—City, municipal auditorium. **$250,000.**

Fla., West Palm Beach—Palm Beach Co., Negro high school. Over **$250,000.**

Ga., Macon—State Bd. Corrections, State Capitol, Atlanta, prison for women. **$250,000.**

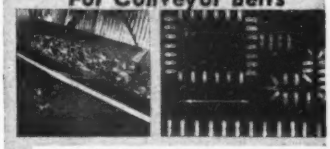
Ill., Mount Carmel—Bd. Supervs. Wabash Co., Court House, Mount Carmel, voted $350,-000 bonds, 3 story, ground floor 125x136 ft. T-shaped, brick, stone, steel, concrete hospital. Over **$350,000.** Charles B. Spencer, 404 Chemical Bldg., 721 Olive St., St. Louis, 1, Mo., archt.

Ill., Murphysboro—Township High School Dist. 100, Bd. Educ., Murphysboro, plans by McCoy & Wilson, Mount Vernon, brick, concrete high school. **$250,000.**

Present Day Practice in Belt Fastening

Every man who has anything to do with the purchase, application or maintenance of conveyor, transmission or V-belts will find the bulletins listed below of considerable value in connection with belt fastening work. A knowledge of present day practice in belt fastening helps reduce the loss in machine hours due to belt failures caused by the use of the wrong type of fastener or improper application. We shall be glad to send any or all of them to you or to any of the men in your organization.

For Conveyor Belts



FLEXCO HD Belt Fasteners are used to make a "water-tight" butt joint in conveyor belts ranging from ¼" to 1½" thick and of any width. The view on the right shows the various types of rips that can be repaired with these fasteners and Flexco HD Rip Plates.

Bulletin F-100 gives complete details on how to fasten and repair conveyor belts.

For V-Belts

ALLIGATOR V-Belt Fasteners are now being widely used to fasten B, C and D, open-end V-belting of cross woven fabric core construction now being made by most belting manufacturers. The view at the left shows a typical application of these fasteners to a drive where endless V-belts would require dismantling the machinery to put the belts on the sheaves.

Bulletin V-205 gives complete instructions on how to use V-belt fasteners.

FLEX V Fasteners for A and B belts are also available for lighter duty V-belt drives. Ask for **Bulletin V-14.**

For Transmission Belts

ALLIGATOR Steel Belt Lacing is in world-wide use to make smooth, flexible joints in leather, rubber, balata, stitched canvas or solid woven belts up to ⅜" thick and as wide as they come.

Bulletin A-60 tells how to fasten and repair transmission belts.

Sold by Supply Houses Everywhere

FLEXIBLE STEEL LACING COMPANY
4656 Lexington Street, Chicago 44, Ill.

WATER IS "DUCK SOUP"...

WITH COMPLETE WELLPOINTS

Don't let ground water stop you. COMPLETE'S patented, fluted-tube wellpoints won't clog . . . can de-water every type of water-laden soil wherever well-point operation is practicable . . . are the simplest and most economical de-watering equipment known to present day engineering.

Sale or rental. Call "COMPLETE" and forget your water problems.

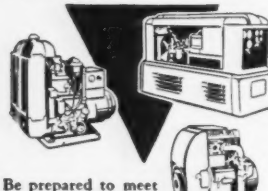
2 to 5 stage
jetting pumps available

COMPLETE MACHINERY & EQUIPMENT CO., INC.
LONG ISLAND CITY 1, N. Y.
Engineering agents throughout the U. S.

COMPLETE WELLPOINT SYSTEMS

Power Failure Insurance!

FAIRBANKS-MORSE GENERATING SETS



Be prepared to meet costly, dangerous power interruptions. Fairbanks-Morse generating sets deliver the power you need indefinitely. Available in A.C., D.C. or A.C-D.C. . . . with manual, remote or automatic controls, in capacities from 350 to 35,000 watts. See your Fairbanks-Morse dealer or mail the coupon today.

FAIRBANKS-MORSE
Fairbanks, Morse & Co.
600 S. Michigan Ave., Chicago 5, Illinois
Gentlemen: Please send complete information about generating sets for standby service.
Firm Name.....
Address.....*RD*.....
City.....*State*.....
66-2

Ind., Kokomo—School Bd., Haworth Vocational School, **$370,000.**

Ind., Logansport—State Procurement & Supply Div., 404 State House, Indianapolis, plans completed by McGuire & Shook, 1401 Fletcher Trust Bldg., Indianapolis, 1 story, bsmnt., 36x270 ft. and 44x60 ft. wing brick, concrete structural steel, dormitory addn., State hospital. **$250,000.** CD 6/20/45—ENR 6/28/45.

Ind., Portland—Bd. School Trustees, Portland, plans completed by McGuire & Shook, 1401 Fletcher Trust Bldg., Indianapolis, two 2 story, bsmnt., 46x58 ft., brick, stone, rein.-con. high school wings. **$250,000-$275,000.**

Ind., Roseland—Hans E. Mohn, trustee Clay Twp., Roseland, high school near here. **$300,000.**

Kan., Meade—Bd. Educ., Meade, plans by Hibbs & Robinson, 619 S. Broadway, Wichita, school, **$280,000.**

Md., Sykesville—Bd. Educ., Carroll Co., Westminster, plans by Finney, Wolcott & Assoc., 10 W. 25 St., Baltimore, 1 story, steel, concrete high school, incl. auditorium, gymnasium, cafteria. **$250,000.**

Mass., Abington—Town, Supt. Schools, Abington, school. Over **$250,000.**

Mass., East Braintree—Town, R. W. Proctor, supt. Schools, plans by Adden Parker Clinch & Crimp, 177 State St., Boston, school, Elm and Hayward Sts. **$600,000.** CD 2/27/46—ENR 5/16/46.

Mass., Erving—Town Housing Authority, Erving, veterans housing.

Mass., Fall River—Bradford Durfee School, State Dpt. Educ., 200 Newbury St., Boston, plans by Edward M. Corbett, 49 Purchase St., and Samuel T. Dibitsky, 41 N. Main St., 3 story, bsmnt, 72x145 ft. chemistry laboratories, science classrooms, Bank and Green Sts. **$375,000.** CD 5/19/47—ENR 5/29/47.

Mass., Foxboro—Town, Supt. Schools, Foxboro, plans by Adden, Parker, Clinch & Crimp, 177 State St., Boston, 2 story, brick elementary addn. to high school. Over **$250,000.**

Mass., Hingham—Town School Dpt., 60 Central St., plans by Downer & Root, 165 Newbury St., Boston, high school. Approx. **$250,-000.** Thomas Worcester, Inc., 44 State St., Boston, engr. CD 1/4—ENR 1/20.

Mass., Mattapoisett — Town Supt. Schools, school addn. or new school. Over **$250,000.**

Mass., New Bedford—City, Supt. Schools, 166 William St., Horatio A. Kempton School addn. Shawmut Ave. and Robeson St. Over **$250,000.**

Mass., Newburyport—City Housing Authority, Leon M. Plumer, secy., Newburyport, 39 unit veterans housing. **$300,000.**

Mass., Upton—Town, M. C. Temple, chn. School Com., plans by Wm. G. Upham, 700 Washington St., Norwood, 2 story, bsmnt., brick, rein.-con. high school. **$250,000.** CD 5/21/45—ENR 5/31/45.

Mass., Wilbraham—Town, Bd. Educ., Wilbraham, plans by Louis C. Hunchey, 25 Harrison Ave., Springfield, school. **$250,000.**

Mass., Worcester—Bureau P. Bldg., City Hall, plans by Johnson & Rustigian, 390 Main St., 2 story, bsmnt., brick school, Columbus Park School, 75 Lovell St. Over **$250,000.** CD 9/1/43—ENR 9/9/43.

Mich., Mount Pleasant—Central Michigan College of Educ., Mt. Pleasant, plans by Roger Allen, 1126 Grand Rapids National Bank Bldg., Grand Rapids, Zone 2, heating plant addn., remodeling. **$275,000.**

Mont., Forsyth — School Dist., 4, Forsyth, plans by E. G. Osness, Billings, high school and gymnasium. **$300,000.**

Mont., Miles City—State of Montana, Helena, bldg. for cannery, creamery and meat processing plant at State Industrial School. **$150,000.** CD 9/13/45—ENR 9/27/45.

Okla., Antlers — Pushmataha Co., Antlers, hospital. **$300,000.** George G. Toler, Ada, consult. engr.

Pa., Elders Ridge—Elders Ridge School Dist. plans by Tillman Schweyer, Boartz Bldg., Kittanning, 2 story, brick, steel, high school addn. **$250,000.**

Pa., Limerick (Royersford P.O.)—Limerick Twp. School Bd., Royersford, plans by Marshall W. Hughes, 1015 Lancaster Ave., Reading, school. **$400,000.** CD 2/19—ENR 3/4.

Tex., Galveston—University of Texas School of Medicine, 915 Strand St., 32-bed Henry and Rose Ziegler Memorial Tubercular Hospital unit. **$305,000.** M Lemmon, 1210½ Main St., consult. engr.

Tex., Helotes—Bexar County Common School Dist., c/o Clyde E. Smith, 1411 Highland Blvd., high school. **$300,000.**

Tex., Hondo—Hondo Independent School Dist., Hondo, high school. **$250,000.** Charles Hule, Jr., 1805 Transit Tower, San Antonio, consult. engr.

Tex., Seymour—Seymour Independent School Dist., Henry Briggs, pres., plans by Wyatt C. Hedrick, 1095 First Natl. Bank Bldg., Fort Worth, 1 story, brick school, concrete fdn. **$350,000.**

B. C., Lillooet—Lillooet School Bd., P. J. Wilson, dist. admin., ratepayers approve school program Lillooet, Bralorne, Pavilion, Gold Bridge, Approx. **$262,000.**

Man., Hamiota — Municipality, hospital, **$250,000.**

Man., Shilo—Dominion Govt., Dpt. National Defense, Cartier Sq., Ottawa, Ont., 73 double dwelling units, **$310,000.** Canadian Commercial Corp., 70 Lyon St., Ottawa, Ont., engr.

Ont., Etobicoke — Etobicoke Twp. Islington, plans by C. W. Smith, 602 Jane St., Toronto, school. **$250,000.**

Ont., Kingston—City, F. J. Parker, clk., City Hall, ratepayers approve sports center. Approx. **$325,000.** Driver & Smith, 81 Brock St., archts. CD 4/25/46—ENR 7/11/46.

Ont., Oshawa — Municipality, city hall, **$300,000.**

Ont., Owen Sound—Municipality, civic center, auditorium, swimming pool. **$150,000.**

Ont., Princeton—Bd. Educ., Princeton, public and high school. **$250,000.**

Ont., Virginiatown—Improvement Dist. of McGarry, Virginiatown, housing. **$300,000.**

Que., Arvida—Municipality, plans by Featherstonhaugh & Assoc., 660 W. St. Catherine St., Montreal, city hall, **$350,000.** R. Lemieux, city engr. CD 9/21/44—ENR 10/19/44.

Sask., Lloydminster—Municipality, ratepayers approve hospital, **$320,000.** Rule, Wynn & Rule, 300 Birks Bldg., Edmonton, archts. CD 7/20/45—ENR 8/2/45.

COMMERCIAL BUILDINGS

Calif., San Francisco — Katherine Delmar Burke School for Girls, 3065 Jackson St., plans by Donald Beach Kerby & Thomas B. Mulvin, 441 Market St., 1 story classroom addn. bldg., **$250,000.**

Calif., Whittier—Whittier College, 505 E Philadelphia St., plans by William H. Harrison, 816 W. 5 St., Los Angeles, 3 story, 37 x 148 ft. dormitory, **$250,000.**

Colo., Hugo — Lincoln County Community Hospital Assn., Hugo, plans by Charles H. Kellogg, Mining Exchange Bldg., Denver, 1 story, 35 to 40 bed hospital **$400,000.**

Conn., Bridgeport—Boys Club of Bridgeport, Inc., 231 Middle St., plans by Fletcher Thompson, Inc., 211 State St., 1 story, bsmnt., brick, concrete, steel club house, incl. swimming pool, offices, playrooms and gymnasium, Madison Ave. **$325,000.** CD 1/24/45—ENR 2/8/45.

Ind., Jasper—St. Joseph Roman Catholic Church, Rev. Msgr. Leonard Wernsing, Jasper, 2 story, brick parochial school. **$250,000-$300,-000.**

Ia., Storm Lake — Buena Vista College, Storm Lake, plans by W. M. Ingemann & M. V. Bergstedt, 345 Minnesota St., St. Paul, girls dormitory. **$275,000.** CD 2/17/44—ENR 3/9/44.

N. J., East Orange—East Orange General Hospital, Central Ave., plans by Vincent Kling, 5 English St., Cranford, nurses home and hospital addn. Over **$250,000.** Edward A. Sears, 55 Broadway, New York, N. Y., consult. engr.

O., Newark—St. Francis de Sales Schools, Rev. Edward McGinity, pastor, plans by John P. Schooley of Sims, Cornelius & Schooley, 2901 N. High St., Columbus, 92x250 ft. brick bldg. housing gymnasium-auditorium seating 800, and a stage, etc., on church property fronting Pearl St. CD 7/20/44—ENR 8/10/44.

Okla., Lawton—Thomas H. Lewis, Jr., Lawton, plans by W. B. Hendrich, Lawton, 60 home housing. **$100,000.**

Pa., Coatesville — Coatesville Eerie No. 467 Fraternal Order of Eagles, Coatesville, sketches by Clair H. Ruchert, 611 W. Market St., York, lodge addns., alterations. **$250,000.**

S. D., Hot Springs—West River Crippled Childrens Hospital, Hot Springs, plans by Luvine Berg, Hill City, hospital. **$350,000.**

S. D., Mitchell—Methodist State Hospital, Mitchell, hospital addn. **$265,000.** CD 10/4/45—ENR 10/18/45.

Tex., Houston—W. H. Krenzler, 540 South Blvd., apartments and duplexes, Wronxton Rd. **$250,000.**

Tex., Lubbock—First Presbyterian Church, Lubbock, plans by Henry Steinbomer, 912 Travis Bldg., San Antonio, remodeling masonry, concrete, steel church into 3 story educational. **$250,000.**

Tex., San Antonio—Highland Park Lutheran Church, 106 Roseborough St., church. **$250,-000.**

Tex., Texas City—Southwestern Bell Telephone Co., 308 S. Akard St., Dallas, 2 story, 89x142 ft. masonry telephone bldg., concrete fdn. **$250,000.**

Tex., Tyler—Tyler Elks Club (B.P.O.E.), M. V. Sadman, chn. Bldg. Comn., Tyler, 3 story concrete and steel Elks Club, concrete, steel fdn., and for addnl. stores later. **$250,000.**

Ont., Etobicoke — Owner, c/o G. Bazeley archt., 193 Forest Hill Rd., Forest Hill, fifty 28x8x ft. apartment units, on 12 acre site. **$360,000.**

Ont., Fort William — McKellar Hopital Rd., Fort William, plans by Govan & Assoc., 515 Jarvis St., Toronto, 80x125 ft. heating plant. **$100,000.** Morrison & Assoc., 96 W. Bloor St., Toronto, engrs.

Ont., Hamilton — Royal Connaught Hotel, King St. E., and Cardy Corp., Ltd., Mount Royal Hotel, Montreal, hotel alterations, improvs. Approx. **$250,000.**

Ont., Niagara Falls—F. A. Branscombe, 460 Thorold Rd., 35 houses, Royal subdivision, Lundy's Lane. **$250,000.**

Ont., St. Catherines—Catholic Archdiocese of Toronto, Toronto, rate payers approved expenditure hospital, for Religious Hospitallers of St. Joseph of Hotel Dieu. Approx. **$425,000.** C. C. Woods, 12 Richmond St. E., Toronto, archt. CD 11/8—ENR 11/18.

Ont., Toronto—St. Michaels Cathedral Choir School, 200 Church St., plans by J. Haffa, 96 W. Bloor St., school, Bond St. **$250,000.**

Que., Mont Laurier—Reverand Sisters of Precious Blood, 4361 Decarie Blvd., Montreal, plans by F. Raciot, Contrecoeur, convent. **$300,000.**

Que., Montreal—Julius Richardson Convalescent Hospital Bd., Montreal, plans by R. Tetley, 1235 McGill College Ave., hospital, Cote St. Luc Rd. **$250,000.**

Que., Quebec West—Corporation de Sanatorium Oller, Quebec City, plans by Bouchard & Rinfret, 400 Charest Blvd., Quebec City, hospital and rest home, **$300,000.**

Que., St. Laurent (Postal Dist. Montreal)—Montreal Ladies Benevolent Bd., Montreal, plans by H. W. Davis, 647 Belmont St., Montreal, aged peopies home, St. Mathieu St., **$300,000.**

Que., St. Mathieu de Montmagny—R. C. Parish of St. Thomas, St. Mathieu, church and presbytery, **$250,000.**

INDUSTRIAL BUILDINGS

Calif., San Leandro — WAREHOUSE — Lucky Stores, Inc., 377 2 St., Oakland, 160,000 sq. ft. warehouse and administration offices. Over **$100,000.**

Mo., Robertson (St. Louis Zone 21, P. O.)—WAREHOUSE—General Motors Corp., Electro Motive Div., Railway Exchange Bldg., 611 Olive St., St. Louis, Zone 1, 1 story, 140x320 ft. concrete, steel warehouse, Brown Rd., east of Lindbergh Blvd.

Neb., Omaha—PLANT—Kitty Clover, Inc., 1105 S. 24 St., plans by Leo A. Daly, Insurance Bldg., potato chip plant. **$250,000.** CD 9/25/47—ENR 10/9/47.

Neb., Omaha—PLANT—Omaha Processing Co., c/o Abbas Processing Co., RFD 1, Council Bluffs, Ia., animal processing plant. **$150,000.**

Tex., Bayside—PLANT—Bayside Richardson Co-operative Gin Co., M. K. Gillespie, pres., Bayside, cotton gin plant, steel constr. three million BTU heating unit, electrically-powered. **$150,000.**

Tex., Beaumont—PLANT—Southern States Steel Corp., 4423 Warcola St., Dallas, steel fabricating plant. **$200,000.**

Tex., Bishop—PLANT—Stratton Pipe Line Co., 3105 N. Leopard St., Corpus Christi, industrial plant, on 44 acre site. Approx. **$250,000.**

Alta., Edmonton — PLANT — Owner, c/o Whyte & Co. Ltd., agt., 10117 100 St., plant, Kingsway, north of 10 Ave. Approx. **$300,000.**

Alta., Strathcona—OIL REFINERY—McColl Frontenac Oil Co. Ltd., 360 St. James St., oil refinery, G. W. Jarvis, c/o owner, engr.

Ont., Hamiliton—GARAGE—Hydro-Electric Comm., 12 E. King St., plans by G. T. Evans, 36 James St., 2 story, 133x206 ft., rein.-con. steel, brick garage. **$100,000.**

Ont., London — FACTORY — Doyle Equip. Co., First St., 60x150 ft. factory, **$100,000.**

Ont., Wawa—PLANT—Algoma Ore Properties, Ltd., Sault Ste. Marie, sink float and ore separating plant, **$100,000.**

UNCLASSIFIED

Iowa—RURAL DISTRIBUTION LINES—Ida Grove Rural Electric Co-operative, Ida Grove, 4 mi. rural distr. lines, headquarters facilities, two-way radio communication sys., Ida Co. **$267,000.** Brown Eng. Co., 419 1 Ave., Des Moines, engr. CD 11/18—ENR 12/30.

Iowa—RURAL DISTRIBUTION LINES—T. I. P. Rural Electric Co-operative, Brooklyn, 112 mi. rural distr. lines sys. imprvs., Poweshiek Co. **$270,000.** Phillip L. Burns, 630 Davenport Bank Bldg., Davenport, engr.

Louisiana—RURAL DISTRIBUTION LINES—Bossier Rural Electric Membership Corp., Bossier, 30 mi. rural distr. lines, sys. imprvs., Bossier Co. **$190,000.**

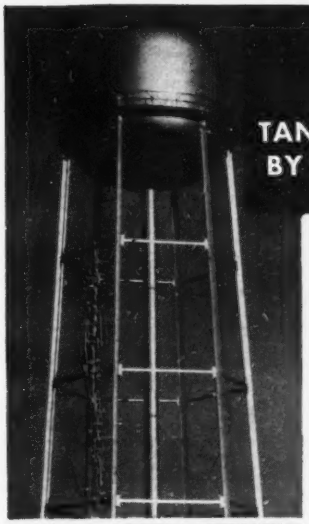
Louisiana—RURAL DISTRIBUTION LINES—Dixie Electric Membership Corp., Zachary, 110 mi. rural distr. lines, sys. imprvs., East Baton Rouge Parish. **$240,000.** Frank Horton & Co., Lamar, Mo., engrs. CD 5/12—ENR 6/3.

B. C., Vancouver—COMMUNITY CENTER—Municipality plans by Townley & Matheson, 1376 Hornby St., community centre, Connaugh Park. **$160,000.**

Man., Winnipeg — RADIO STATION — Bergman Moffat Broadcasting Co., Ltd., Winnipeg, radio station. **$100,000.**

N. B., Campbellton—ARENA—Canadian Legion, c/o J. V. Harquail, Campbellton, arena. **$150,000.**

Ont., Fort Frances—ARENA—Town, D. W. Walder, clk., rate payers approved 137x265 ft. ice arena, auditorium, memorial arena. Approx. **$250,000.** Moody & Moore, 295 Broadway Ave., Winnipeg, Man., archts. G. G. Reid, 264 Avenue Rd., Toronto, engr. CD 12/15—ENR 12/30



COLE

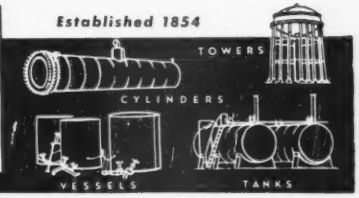
TANK DESIGNING BACKED BY 95 YEARS EXPERIENCE

● Cole has specialized in the design, fabrication, and erection of elevated tanks for four generations. This long experience enables us to handle your assignment with dispatch, and to your complete satisfaction.

Cole builds tanks, towers, vessels, cylinders, bins, etc., to your specifications — any size, any shape, any metal. Send us your inquiries. Write for catalog — "Tank Talk."

R. D. COLE MANUFACTURING CO.
NEWNAN, GA.

Established 1854



LEWIS & McDOWELL Inc.
Engineers & Contractors

GUNITE work in all its Branches
Prestressed Gunite Tanks
Waterproofing, all types
Restoration of Masonry Buildings
Synthetic Rubber and other special Tank Lining
Dam Repairs and Reconstruction

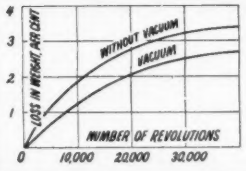
285 Madison Avenue, New York, N. Y.
Murray Hill 3-0554

ERIE
Single Stage - Side Suction
Centrifugal Pumps

TYPE E ENCLOSED IMPELLER
TYPE O OPEN IMPELLER
Sizes 1" to 12"

ERIE PUMP & ENGINE WORKS
152 Glenwood Ave. Medina, N. Y.

VACUUM CONCRETE



Is TOUGH CONCRETE
Heavy duty floor surface is a by-product
Write for further information

VACUUM CONCRETE INC. 4210 SANSOM ST. PHILA. 4, PA.

CONSTRUCTION REPORTS—Third Section

WATER SUPPLY

BIDS ASKED

February 15

Ga., Buchanan—City, WW imprvs. $40,000. Extended date. J. P. Baskin & Assoc., P.O. Box 101, Rome, engrs. CD 12/22—ENR 1/6.

Tex., Dallas—City, Earl Goforth, secy., 24 in. c.i. watermain in Corinth St. between Industrial and S Sts., and 16 in. line in S and Bonnie View from Corinth to Morrell. $80,000. CD 12/1—ENR 12/23.

February 16

La., Marrero—Jefferson Parish Waterworks Dist. 2, water distr. sys. Plans deposit $10. S. N. Applewhite, 424 Willandon St., New Orleans, engr.

February 17

Conn., Hartford — Hartford Metropolitan Dist. Water Bureau, Bd. Contr. & Supply, 650 Main St., furnishing copper sealing strips, 8500 lb., fabricated copper, Contr. 152; furnishing one loader mounted on pneumatic rubber tires, Contr. 153; furnishing motorized gate valves two, 16 in. motorized gate valves, Contr. 154.

February 23

Ga., Augusta—City, water filtration plant addn. incl. 2 filters, settling basin. Plans deposit $25. Robert & Co. Assoc., 96 Poplar St., Atlanta, engrs. CD 9/3/46—ENR 9/19/46.

February 24

Tex., Hitchcock—Galveston County Water Control & Imprvt. Dist. 7, W. T. Reitmeyer, WW sys. $90,000. Plans deposit $15. Joe J. Rady, 811 American Fidelity Bldg., Fort Worth, engr. CD 10/29/45—ENR 11/15/45.

LOW BIDDERS

Tex., Poteet—City, Jan. 12, 100,000 gal. rein.-con. ground reservoir, 2- to 8-in. water lines, water supply line, fire hydrants, pumping unit, from Trueheart & Caldwell, 509 American Hospital & Life Bldg., San Antonio, **$77,564.** Est. $35,000. CD 1/5.

Tex., Weatherford—City, W. Sadler, mayor, Jan. 24, water storage reservoir, imprvs., from Pittsburgh-Des Moines Steel Co., Praetorian Bldg., Dallas, **$57,300.** Est. $35,000. CD 1/13.

CONTRACTS AWARDED

●**N. Y., New York**—Comr. Water Supply, Gas & Electricity Municipal Bldg., Zone 7, steel and c.i. watermains, appurtenances, Archer Ave., 138 Pl., Rockaway, Sutphin, Queens and Van Wyck Blvds., Queens Boro, to Oscar Hill Constr. Co., Inc., 74-20 Caldwell St., Maspeth, **$1,226,000.** Bids 6/15. CD 6/21—ENR 6/24, under LB.

Tex., Dallas—City, Earl Goforth, secy., 24 in. c.i. watermain from Harwood and Bryan Sts. to Pacific and Griffin Sts., from E. E. Farrow Co., 6109 Forest Park Rd., **$48,722.** CD 12/1—ENR 12/23.

Tex., Dallas—City, Earl Goforth, secy., Contrs. 1, 2 and 3, 36 and 42 in. c.i. pipeline between Bachman Plant and Washington St. and central sect., to W. G. Cullum & Co. and Cole Williams, Gr. Natl. Life Bldg., **$247,463.** Bids 1/18, awarded 1/27. CD 1/26—ENR 2/3, under LB.

SEWERS, WASTE DISPOSAL

BIDS ASKED

February 24

Pa., Embreeville—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, sanitary sewers at Embreeville State Hospital. Plans deposit $5. John H. Wickersham, 14 S. Duke St., Lancaster, engr. CD 1/24—ENR 2/3.

Pa., Warren—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, sanitary disposal plant imprvs. at Warren State Hospital. Plans deposit $2.50. G. Arthur Danielson, 209 Hayes Bldg., Erie, engr.

Tex., Hitchcock—Galveston County Water Control & Imprvt. Dist. 7, sanitary sewerage sys. $120,000. Plans deposit $15. Joe J. Rady, 811 American Fidelity Bldg., Fort Worth, engr. CD 11/1/45—ENR 11/29/45.

LOW BIDDERS

Fla., Miami—Dade Co., Courthouse, Jan. 25, 36 St. storm sewer interceptor, Miami International Airport, from Joe Reinertson, 2027 N. W. 7 Ave., **$208,776.** CD 1/12.

Ill., Chicago—Sanitary Dist. of Chicago, 910 S. Michigan St., Jan. 27, furnishing, installing piping, appurtenances, steam generators, Div. U, West-Southwest Sewage Treatment Plant, Stickney, from Robert Gordon, Inc., 14 N. Jefferson St., **$729,990.** CD 1/18—ENR 1/20.

Ia., Ames—City, City Hall, Jan. 17, sewage plant, from Lippert Bros., Boone, **$972,700.** CD 1/6.

Okla., Henryetta—City, M. M. Morgan, clk., Jan. 18, outfall sewer and sewage treatment plant, from Lippert Bros. Co., 2800 N. Santa Fe St., Oklahoma City, **$72,981.** Approx. $75,000. L. M. Goodwin, Fayetteville, Ark., engr.

CONTRACTS AWARDED

Ill., Chicago—Sanitary Dist. of Chicago, 910 S. Michigan St., electrical work, settling tanks, Battery C., Div. BB, West-Southwest Sewage Treatment Works, Stickney, to Northern States Co., 33 N. LaSalle St., **$724,270.** Bids 1/13. CD 1/18—ENR 1/20, under LB.

Ill., Chicago—Sanitary Dist. of Chicago, 910 S. Michigan St., Div. LL, West-Southwest Sewage Treatment Works, Stickney, to James H. McCauley & Sons, Inc., 5620 W. 65 St., **$529,683.** Bids 12/16. CD 1/18—ENR 1/20.

Kan., Liberal—City, City Hall, sewage plant, to Burt & Binford, 507 W. 2 St., Hutchinson, **$159,000.** CD 12/15—ENR 12/30.

BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

February 8	**February 11**
South Carolina	**North Dakota**
February 9	**February 15**
Colorado	**Virginia**

On or about March 8

†**New Hampshire**—U. S. Eng., 21, U. S. Naval Drydock, South Boston, Mass., West Peterborough Hy. Bridge and Box Culvert, West Peterborough Dam, Hancock. Plans deposit $5.

LOW BIDDERS

Maryland—State Hy. Dpt., Baltimore, repairing substructure and superstructure concrete bridge over Miles River, incl. conc. slab spans supported on precast concrete piling and steel bascule draw span at channel, etc., State Rt. 370, T 126-1-715, Talbot Co., from The Empire Constr. Co., 31 S. Calvert St., Baltimore, **$119,655.**

†**Md., Chesapeake City**—U. S. Eng., 121 N. Broad St., Phila. 1, Pa., postponed opening bids approaches to Chesapeake City Bridge Chesapeake and Delaware Canal, approx. 6 mi. south of Elkton, Md. and 24 mi. southwest of Wilmington, Del., Inv. Eng. 36-109-49-83. CD 12/30—ENR 1/6.

●**New Jersey**—State Hy. Dpt., Trenton, Jan. 27, bridge 0.084 mi. Rt. 4 Parkway, Sect. 1B, F. A. P. U-18S (8), Middlesex Co., from Franklin Contg. Co., 12 Central Ave., Newark, **$1,461,127.** CD 1/10—ENR 1/13.

●**Pennsylvania and New Jersey**—Delaware River Joint Bridge Comm., Camden Plaza, Camden, N. J., Jan. 24, Delaware River Bridge expansion program, Contr. 4, widening central portion of bridge between Phila., Pa., and Camden, N. J., from Kaufman Constr. Co., Inc., 4000 Pulaski Ave., Phila., Pa., **$2,012,430.** CD 1/6—ENR 1/13; new roadway lighting sys., Contr. 2, from W. V. Bangert & Co., Inc., 1927 Montgomery Ave., Phila, Pa., **$197,500.** CD 12/30—ENR 1/6.

CONTRACTS AWARDED

●**New Jersey**—State Hy. Dpt., Trenton, Manasquan River Bridge, Rt. 35, Monmouth and Ocean Counties, to R. M. Haggard Eng. Co., Highland Ave., Westmount, **$1,625,035.** Bids 1/6, awarded 1/25. CD 1/10—ENR 1/13, under LB.

STREETS AND ROADS

BIDS ASKED

STATE HIGH WAY LETTINGS

February 8	**February 11**
South Carolina	**North Dakota**
February 15	
Virginia	

February 21

Neb., Omaha—At office John Slavik, clk. Douglas Co., bit. approx. 1 mi. Waterloo Mail Route, Road 29 between Roads 82 and 96; approx. 1 mi. Valley Mail Route, Road 13 between Roads 92 and 96; approx. 1 mi. Millard Mail Route, Road 56 between Roads 41 and 45; approx. 1¼ mi. R.F.D. 1, Road 33 between Papio and Road 52; approx. ½ mi. R.F.D. 2, Redick Ave., between 60 and 66 Sts.; approx. ⅝ mi. R.F.D. 6, Road 20 between Roads 5 and 7; adv. ENR 2/10. CD 1/19—ENR 2/3.

March 3

†**Colorado**—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, relocating State Hy. 280, Granby Reservoir, Colorado-Big Thompson Proj., Spec. 2545. Michael W. Straus, comr. adv. ENR 2/10.

March 4

Ala., Mobile—Mobile Co Bd. Revenue, Mobile, paving 31.45 mi. 4 roads. $900,000.

LOW BIDDERS

Tex., Corpus Christi—City, H. H. Allen, mgr., Jan. 28, asph. resurf. Water St., from M-J Constr. Co., Beeville, **$242,091.** CD 1/11—ENR 1/13.

CONTRACTS AWARDED

Tex., Sinton—San Patricio Co., Sinton, new and reconditioned all weather roads, caliche base, asph. topping, Central part of County (Sinton-St. Paul areas), Precinct 1, **$170,000;** Precinct 2, northern part of county, **$135,000.** Owner builds. W. J. Kelly, Hondo, engr.

EARTHWORK, WATERWAYS

BIDS ASKED

February 8

†**Kansas** — Bureau Reclamation, Dpt. Interior, Ellis, Cedar Bluff Dam and relocation county roads, Spec. 2483, Missouri River Basin Proj. Extended date.

February 14

†**Colorado**—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, three 5x4 inch jet pumps for Estes Power Plant, Colorado-Big Thompson Proj. Spec. R7-42 (Region 7). L. N. McClellan, ch. engr.

February 15

†**Arkansas**—U. S. Eng., foot of Prytania St., New Orleans, 9, La., pile dike construction, Red River, Fulton, D-428,5-L, Serial No. Eng.-16-047-49-214.

February 18

†**Arkansas**—U. S. Eng., 300 Broadway, Little Rock, Norfolk Shelter Norfolk Dam, White River Watershed, North Fork River. Serial No. Eng.-03-050-49-39. Extended date. CD 1/25—ENR 1/27.

February 23

†**Montana**—Bureau Reclamation, Dpt. Interior, Billings, Savage Pumping plant, canal and laterals, Missouri River Basin Proj., Savage Unit, Spec. R6-26 (Region 6). Ext. tended date. L. N. McClellan, ch. engr. CD 1/5—ENR 1/13.

LOW BIDDERS

†**Arkansas**—U. S. Eng., 300 Broadway, Little Rock, Jan. 25, levee and drainage structure, Little Rock to Pine Bluff (Head of Pouche Island to Pennington Bayou), Pulaski Co., Serial No. Eng.-03-050-49-29, Lot 4, from W. D. Jeffrey Co., Fort Smith **$208,308,** est. $172,652; Lot 5, from S. K. Jones Contr. Co., Sterick Bldg., Memphis, Tenn., **$273,213,** est. $222,143. CD 1/18—ENR 1/20.

†**Louisiana**—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, cancelled bids to have been opened Jan. 28, 260,000 cu. yd. semi-compacted earthwork, Item R 405.-0-R, Garland Levee Dist., Levee enlargement, Red River, blow Denison Levees, Serial No. Eng., 16-047-49-207. CD 1/12—ENR 1/20.

†**Oregon**—U. S. Eng., Pittock Block, Portland, Jan. 25, restoration revetment along Bradford Island directly downstream from spillway dam at Bonneville, Multnomah Co., No. 35-026-49-362, from Miller & Strong, Eugene, **$66,965.** Est. $50,953.

Pennsylvania—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, Jan. 26, constructing Chapman Dam on Tionesta Creek, Pleasant Twp., Warren Co., from H. T. Osburn & Co., Inc., 631 Twelfth St., Franklin, **$314,716.** Est. $300,000. CD 12/28—ENR 1/6.

Tex., Beaumont—Jefferson County Drainage Dist. 6, Courthouse, Jan. 25, widening, deepening south fork Taylors Bayou, over 500,000 cu. yd. dragline, etc., from McGinnes Bros., 5619 Griggs Rd., Houston, **$72,000.**

CONTRACTS AWARDED

Tex., Houston—San Jacinto Memorial Park Cemetery, c/o Miles Strickland, 2nd Natl. Bank Bldg., earthern lakes, grading, landscaping, drainage. Own forces. **$125,000.** CD 12/17/47—ENR 1/8/48.

AIRPORTS AND AIRBASES

BIDS ASKED

February 24

†**Kan., Wichita** — AIR CONDITIONING SYSTEM, etc.—Civil Aeronautics Admin., City Hall, Kansas City, Mo., air conditioning sys., air traffic control tower, municipal airport. CD 3/18—ENR 4/1.

PUBLIC BUILDINGS

BIDS ASKED

February 14

Calif., Oroville—Butte Co., Courthouse, 2 story, bsmnt., rein.-con. Hall of Records bldg. Over $250,000. Plans deposit $25. Extended date. E. Geoffrey Bangs, 605 Market St., San Francisco, archt. CD 1/19—ENR 1/20.

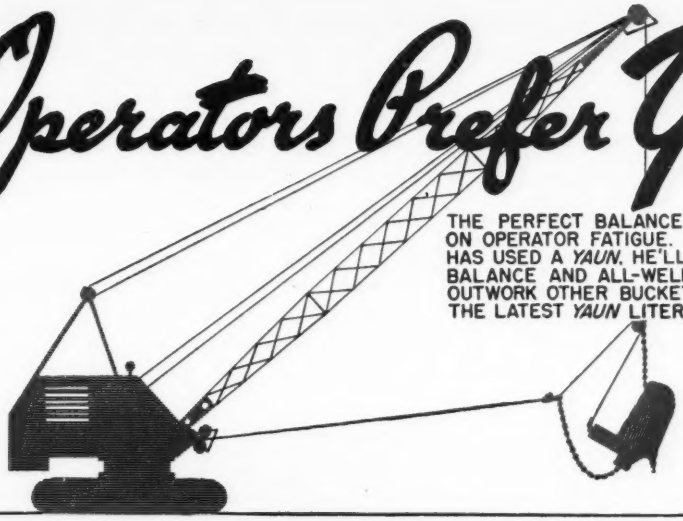
February 15

Ont., St. Catherines—Secy. Bd. Educ., St. Catherines, Edith Cavell School addn., $200,-000; Prince of Wales School addn., $170,000. Glenridge School addn., $85,000. T. R. Wiley, 32 Williams St., and W. A. Salter, 7 Welland St., archts. CD 1/2/48—ENR 1/22/48.

February 16

Tex., Angelton — Angleton Independent School Dist., Angleton, high school. $300,000. **(continued on page 132)**

Operators Prefer Yaun



THE PERFECT BALANCE OF A *YAUN* CUTS DOWN ON OPERATOR FATIGUE. ASK ANY OPERATOR WHO HAS USED A *YAUN*. HE'LL TELL YOU THEIR PERFECT BALANCE AND ALL-WELDED CONSTRUCTION WILL OUTWORK OTHER BUCKETS. ASK YOUR DEALER FOR THE LATEST *YAUN* LITERATURE, OR WRITE DIRECT.

YAUN DRAGLINE BUCKETS AND MFG. PLANT

BATON ROUGE, LA.

ATLAS CONCRETE FORMS

WALLS • CYLINDERS • FLOORS • SEWERS

Irvington FORM & TANK CORP.
Irvington, N. Y.

USE **"GUNITE"** FOR

NEW CONSTRUCTION AND REPAIR OF

Buildings, Canals, Dams, Drains, ditches, Sewers, Clear wells, Reservoirs, Swimming Pools, Oil Storage Tanks, Tunnels, Grain Elevators, Steel Encasement, Stack and Bunker Lining, Fire Proofing, Water Proofing, Concrete Roads and Bridge repair.

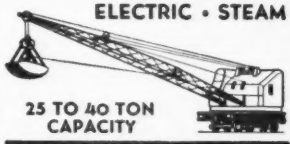
The only successful method for the restoration of disintegrated concrete and masonry.

STEWART CONSTRUCTION CO.

P. O. Box 691 — 1357 S. W. 11th St.
Oklahoma City, Oklahoma
62-6344 — 62-7311

OHIO LOCOMOTIVE CRANES

GASOLINE • DIESEL
ELECTRIC • STEAM



25 TO 40 TON CAPACITY

THE OHIO LOCOMOTIVE CRANE CO.
BUCYRUS, OHIO

The BELMONT IRON WORKS

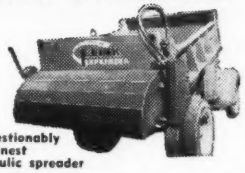
Engineers — Fabricators — Erectors
Contractors — Exporters
Cable address—Beliron

STRUCTURAL STEEL
BUILDINGS & BRIDGES
RIVETED — ARC WELDED
Shops — Eddystone

PHILADELPHIA
Main Office
Philadelphia
48, Pa.

ROYERSFORD
New York Office
44 Whitehall St.,
N. Y. 4, N. Y.

FLINK SPREADERS



Unquestionably the finest hydraulic spreader

Hundreds more transportation companies, cities and counties are using Flink Spreaders to spread granulars in ice control and highway maintenance work. Spread forward or backing up, full or half width of street. Controlled from cab. Write for literature.

FLINK CO Dept. S-6, Streator, Ill.

DRILLING CONTRACTORS

DIAMOND AND SHOT CORE BORINGS — DRY SAMPLE BORINGS

Foundation Testing for Bridges, Dams and all Heavy Structures

Also

Manufacturers of Diamond and Shot Core Drills, Accessories and Equipment

SPRAGUE & HENWOOD, Inc.
Scranton, Pa. — Dept. E, U. S. A.

(Continued from page 130)

Extended date. Ernest L. Shult, 5009 Fannin St., Houston, archt. CD 1/14—ENR 2/3.

February 17

●**Que., St. Laurent**—J. J. O'Sullivan, archt., c/o Central Mortgage & Housing Corp., 1253 McGill College Ave., Montreal. 84 duplex houses, St. Laurent Proj. 1-48-E. Approx. $1,100,000.

February 18

Colo., Colorado Springs—City, Dpt. P. Utilities, Item 1, power piping; Item II, power wiring. Plans deposit $20. Lutz and May, 819 Finance Bldg., Kansas City 6, Mo., consult. engrs. CD 6/10—ENR 6/17.

†**Kansas**—U. S. Eng., 601 Davidson Bldg., Kansas City, Mo., administrative facilities, Kanopolis Dam. Serial No. Eng., 23-028-49-148. CD 1/31—ENR 2/3.

February 21

Ala., Mobile—Bd. School comrs., Mobile Co., Mobile, Baker School. Plans deposit $25. William H. March & N. H. Holmes, Cochran Bldg., engrs.

February 24

Pa., Scotland—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, electrical constr. for new fire alarm sys., bldgs., and exterior at Pennsylvania Soldiers Orphans School. Plans deposit $2.50. Frank M. Highberger, 654 Washington Rd., Pittsburgh, Zone 16, archt. A. F. Jones, c/o owner, ch. engr. CD 10/25/45—ENR 11/15/45.

March 3

●**N. C., Lenoir**—Caldwell Memorial Hospital, Lenoir, 100 bed hospital Mulberry St. $1,200,000. Eric G. Flannagan, McCoin Bldg., Henderson, archt. CD 1/19—ENR 1/27.

March 8

†**Colorado**—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, 750 kva substation at Haxtun. rLL. N. McClellan, c/o owner, ch. engr.

March 9

Pa., Phila.—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, general constr., heating and ventilating, plumbing, electrical work, elevators Bldg. N-9. Maximum Security Bldg. for male patients at Phila. (Byberry) State Hospital. Plans deposit $15 for general, $10 for others. Howell Lewis Shay, 1801 Packard Bldg., archt. A. F. Jones, c/o owner, ch. engr. CD 2/4/0/47—ENR 2/20/47.

About March 18

†**Ga., Camp Gordon (P. O. Augusta)**—U. S. Eng., Post Office Bldg., Savannah, rehabilitation bldgs. facilities Station Hospital. Serial No. Eng.-09-133-49-79. Extended date. CD 1/7—ENR 1/20.

LOW BIDDERS

●**Calif., Agnews**—State Div. Architecture P. Wks. Bldg., Sacramento. Jan. 25, three 2 story rein.-con. ward bldgs., Units 4, 5 and 6 at Agnews State Hospital, from H. Mayson, 2624 Alida St., Los Angeles. **$1,717,814.** CD 1/11—ENR 1/13.

Calif., San Jose—San Jose Unified School Dist., San Jose, Jan. 25, rein.-con. gymnasium and locker bldg. at Abraham Lincoln High School, from Samuel Barth, 1801 McDaniel St., **(1) $365,000 (2) $363,000 (3) $363,500.** CD 1/4—ENR 1/13.

†**Ga., Augusta**—U. S. Eng., Post Office Bldg., Savannah, cancelled bids to have been opened Jan. 18, modification and addns. to obstetrics and emergency clinic, Oliver General Hospital. Serial No. Eng.-09-133-49-142. CD 1/4—ENR **1/13.**

New York—Bd. Transportation, 250 Hudson St., New York, Zone 13, furnishing, erecting structural steel for Castleton Ave. Bus Garage, Castleton and Jewett Aves., Contr. NW-904, from Lehigh Structural Steel Co., 17 Battery Pl., New York, Zone 4. **$202,400.** CD 1/10—ENR **1/13.**

●**N. Y., New York**—Bd. Transportation, 250 Hudson St., Zone 13, Jan. 28, general building constr. work for 59 Street Power Plant, New York City Transit Sys., from Grove, Shepher, Wilson & Kruge, Inc., 247 Park Ave., Zone 17. **$2,176,000.** CD 1/4—ENR 1/13.

Pa., Embreeville—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, Jan. 26, electrical constr. for electrical distr. sys. at Embreeville State Hospital, from Electric Power Constr. Co., 3858 Pulaski Ave., Phila., **$283,000,** est. $300,000. CD 12/20—ENR 12/30; general constr. traffic and steam distr. tunnels at Embreeville State Hospital, from Harry Gill Co., 2515 Germantown Ave., Phila., Zone 33. **$335,156;** heating, from Schmaltz Eng. Co., Kennett Square. **$121,389.** CD 12/22—ENR 12/30.

Pa., Torrance—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, rejected bids Jan. 18, for boiler plant improvs. at Torrance State Hospital, L. B. **$314,327.** Will re-advertise. CD 1/24—ENR 2/3, under LB.

Tex., Dallas—Dallas Independent School Dist., Akard and Royal Sts., Jan. 25, brick stone, concrete Clinton P. Russell School addn., from T. C. Bateson Constr. Co., 822 Irwin-Keasler Bldg., **$472,052.** Est. $250,000. CD 12/21—ENR 12/30.

Tex., Seabrook—Clear Creek Consolidated Independent School Dist., c/o P. H. Green, supt., Seabrook, Jan. 27, school, Kemah; school adn., League City; and Junior High-Elementary School, Seabrook, from Le Blanc Constr. Co., P. O. Box 351, Houston, **$439,960.** R. G. Schneider, 520 W. Bell Ave., Houston, archt.

CONTRACTS AWARDED

●**Fla., Miami**—City, library, to Fred Howland, Inc., 1451 N. W. 20 St., **$1,091,000.** Bids 1/19. **(Correction**—name of contractor.) CD 1/28—ENR 2/3, under C. A.

Ga., Savannah—Chatham Co. Bd. Educ., Savannah, negro high school, to General Constr. Co., Palmetto Bldg., Columbia, S. C., **$543,709.** Bids 1/19, awarded 1/27. CD 1/25—ENR 1/27, under LB.

Ill., Fairfield—Fairfield Hospital, c/o Bd. Hospital Trustees, general contract 2 story, bsmnt., rein.-con. brick, stone community hospital, to Johnson, Drake & Piper, 112 N. 7 St., Terre Haute, Ind., **$700,500.** Bids 12/6. CD 11/5—ENR 11/11.

●**N. Y., Brooklyn**—New York City Housing Auth., 63 Park Row, Zone 7, general contract Nostrand Houses, Proj. N. Y. C-11, in area bounded by Bragg St., Avenue V, Batchelder St. and Avenue X, to Wilaka Constr. Co., Inc., 11 E. 44 St., New York, Zone 17, **$6,750,000*****heating and ventilating, to Jarcho Bros., Inc., 306 E. 45 St., Zone 17, **$1,189,777*****plumbing, to Lipsky & Rosenthal, Inc., Lexington Ave. and 115 St., New York, **$946,500.** Grand total $8,886,277.

●**N. Y., Brooklyn**—Supt. School Bldgs., Design & Constr. 49 Flatbush Ave. exten., Zone 1, general contract P. S. 98, Voorhies Ave. from Nostrand Ave. to E. 29 St., to Caristo Constr. Corp. 26 Court St., Zone 2, **$1,035,000.** Bids 11/17. D 12/1—ENR 12/3.

●**N. Y., New York**—New York City Housing Auth., 63 Park Row, Zone 7, general contract Bronx River Houses, 174 St. and Bron; River, to H. R. H. Constr. Co., 9 E. 40 St., **$8,161,000*****plumbing, to Paramount Plumbing Co., 323 E. 13 St., **$1,066,690*****heating and ventilating, to J. L. Murphy Co., 340 E. 44 St., **$809,000.** Grand total $10,036,690. CD 12/9—ENR 12/16, under LB.

●**N. Y., West New Brighton**—New York City Housing Auth., 63 Park Row, New York, Zone 7, general contract Todt Hill Houses, to William A. Berbusse, Jr., Inc., 101 Park Ave., New York, Zone 17, (a) **$3,372,000.** Bids 1/6. CD 1/10—ENR 1/13, under LB.

Ore., Ashland—Jackson County School Dist. 5, 3 schools and removing Washington School, to Donald M. Drake, Lewis Bldg., Portland, **$621,500.** Bids 1/14. CD 1/24—ENR 1/27, under LB.

Ore., Eugene—Bd. Higher Educ., University of Oregon, library addn., to Waale-Camplan, 2100 S. W. Jefferson St., Portland, **$438,151.** Bids 1/25. CD 12/7—ENR 12/9.

Pa., Phila.—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, general contract renovating Bldgs. A and C, at Phila. State (Byberry) State Hospital to L. F. Driscoll, 18 W. Chelten Ave., Zone 44, **$593,800.** Bids 1/12, awarded 1/26. CD 1/17—ENR 1/20, under LB.

COMMERCIAL BUILDINGS

BIDS ASKED

February 7

Pa., Feasterville—Irving Schlorach, 17 St. and Erie Ave., Phila., theatre, 6 stores and apartments. $250,000. C. H. Williams, c/o owner, archt. CD 1/26.

February 9

Conn., New Haven — Physicians Holding Assn., 256 Bradley St., 3 story, brick, steel business bldg., office suites, main bldg. and wing. Davenport and Howard Aves. $250,000. Douglas Orr, 96 Grove St., archt. CD 12/9—ENR 12/16.

●**N. Y., Watertown** — House of the Good Samaritan, 832 Washington St., hospital alterations and addns. $1,500,000. Extended date. Crow, Lewis & Wick. 200 Fifth Ave., New York, archts. CD 1/11—ENR 1/13.

February 10

Conn., Derby—Southern New England Telephone Co., 227 Church St., New Haven, 2 story, bsmnt., brick, steel, concrete telephone exchange Olivia St. $250,000. Extended date. Douglas Orr, 96 Grove St., New Haven, archt. CD 1/25—ENR 1/27.

N. C., Hillsboro—Piedmont Electric Membership Corp., Hillsboro, building. Plans deposit $25. George F. Hackney, Durham, archt.

February 14

Ont., London—W. D. Jackson, mgr. Western Fair Bd., Richmond Bldg., 200x285 ft., concrete, brick livestock bldg. $750,000. T. C. McBride, city archt. CD 6/29—ENR 7/12/45.

About February 15

La., Shreveport—Charity Hospital, c/o McClenaghn & Barr, archts., Continental-American Bank Bldg. convert Pines Sanitarium into tuberculosis treatment div. $300,000.

About March 15

La., Shreveport—First Baptist Church, c/o J. Chesire Peyton & Assoc., archts., Continental American Bank Bldg., church. $700,000. CD 10/10/45—ENR 10/25/45.

Bids Asked

Calif., Los Angeles—Edwin W. & Harold Pauley, 929 S. Broadway (selected list of bidders) 54,050 sq. ft. shopping center, drug-store, 5 and 10 cent store, market, $500,000. Stiles Clements, 1135 Van Nuys Bldg., archt. CD 12/1—ENR 12/16.

CONTRACTS AWARDED

●**Calif., San Francisco**—Roman Catholic Archbishop of San Francisco, 1100 Franklin St., group of 1, 2 and 3 story, rein.-con. Boys Parochial High School bldgs., to Cahill Bros., 206 Sansome St., San Francisco. **$2,507,570.** Bids 12/16. CD 12/20—ENR 12/23.

Fla., Jacksonville—Lawrence C. Pearce Co. 1201 Kings Ave., 85 family home units in Spring Park Manor on southside. Owner builds. **$595,000.** CD 8/30—ENR 9/9.

●**N. J., Mt. Holly**—Clover Hill Garden Apartments, Inc., 507 Wilson Bldg., Camden, apartments, Garden St., separate contracts. **$2,500,000.** Dante D'Anastasio, 2010 Horner Ave., Pennsauken, archt.

N. Y., Bayside—J. Ingrassi, c/o J. H. Burmeister, 100-29 205 St., Hollis, 26 one family houses, 53 Ave., Francis Lewis Blvd. and 201 St. Owner builds. **$250,000.** CD 11/11—ENR 11/25.

N. Y., Bayside—Water & Co., c/o Samuel Paul & Assoc., archts., 163-18 Jamaica Ave., Jamaica, 27 one-family houses, 73 Ave., 212 and 211 Sts. Owner builds. **$296,000.** CD 11/18—ENR 12/16.

N. Y., Brooklyn—Brooklyn Womens Hospital, 1395 Eastern Parkway, Zone 33, hospital alterations, separate contracts. **$350,000.** CD 4/27—ENR 5/13.

N. Y., Hollis — Henderson Gardens, Inc., c/o S. H. Klein, archt., 90-04 161 St., Jamaica, 43 one-family houses, 185 St. and Henderson Ave., Owner builds. **$369,000.** CD 11/18—ENR 12/16.

●**N. Y., New York**—Uris Bros., 2 Lafayette St., Zone 7, 22 story office at blockfront on west side of Madison Ave. from 51 to 52 Sts., separate contracts. **$4,000,000.** CD 10/29—ENR 11/11.

N. Y., St. Albans—Springfield Estates, Inc., c/o S. H. Klein, archt., 90-04 161 St., Jamaica, 31 one-family houses, 222 and 223 Sts. and 137 and 135 Aves., Owner builds. **$250,000.** CD 11/22—ENR 12/16.

Pa., Ardmore—Maguire Constr. Co., 111 Simpson Rd., residential development, Wynnewood Rd., etc., separate contracts. **$250,000.** Lewis W. Easby, 844 Montgomery Ave., Narberth, archt.

●**Pa., Fort Washington**—Seltzer Bros., 1512 Walnut St., Phila., residential development, Old Hoopstown Tract, separate contracts. **$5,000,000.** Carl Otto, 1528 Buckingham Dr., Rosemont, archt.

Pa., Haverford—Wallace & Warner, 1400 S. Penn Square, Phila., Haverford Square shopping center, separate contracts. **$500,000.**

Pa., Phila. — P. Plotnick, Manheim and Schuyler Sts., residential development, Schuyler St. between Abbotsford Rd. and Clopier St., separate contracts. **$250,000.**

Tex., Beaumont—W. J. Christian & Assoc., 3310 M½ St., Galveston, 22 brick veneer apartments, between McFaddin and Calder Sts., own forces. **$425,000.** CD 11/11—ENR 11/18.

Tex., Dallas—L. A. & I. S. Fonville, 1446 Buckner Blvd., 120 dwellings, own forces. **$832,000.** CD 1/26.

Tex., Dallas—Roy & W. A. Jacobie, J. A. Gaddis & B. A. Ellis, 4449 Travis St., 152 dwellings, own forces. Approx. **$780,000.** CD 1/26.

Tex., Houston—H. & D. Constr. Co., 7501 Edna St., 66 dwellings. Owner builds. **$550,000.** CD 1/26.

Tex., Houston—Jack Perry & James S. Adams, 3209 Westheimer St., 13 brick dwellings, concrete slab fdns., Essex Lane, own forces. **$279,500.** CD 1/21.

●**Tex., San Antonio**—V. F. Buchek & Associated Firms, Majestic Bldg., 300 addnl. dwellings, University Park. Owner builds. **$1,500,000.** CD 1/12—ENR 1/27.

Ont., Windsor—Bersch Homes Ltd., 801 Security Bldg., eighty 1½ story, 26 x 39 ft. concrete, brick houses, owner builds. **$640,000.**

●**Que., Montreal**—H. I. Fanaberia, 4 Hudson Ave., Westmount, six 3 story, bsmnt., 75 x 140 ft. concrete, brick apartments. Owner builds. **$1,320,000.** R. Fisher, 3476 Park Ave., archt.

INDUSTRIAL BUILDINGS

LOW BIDDERS

S. C., Orangeburg — PLANT — Paintset Fashions, Inc., Orangeburg, Jan. 27, garment plant, from Wannamaker & Wells, Inc., Orangeburg. **$75,600.** CD 1/25—ENR 2/3.

Proposal Advertisements see pp. 133, 134 & 155. Proposed Projects see p. 94

OFFICIAL PROPOSALS

RATE: THE RATE FOR OFFICIAL PROPOSAL ADVERTISING IS $1.00 PER LINE (OR FRACTION) PER INSERTION.

COPY RECEIVED UP TO 3:00 P. M. FRIDAY FOR ISSUE OUT FOLLOWING THURSDAY SUBJECT TO SPACE OPEN FOR LAST MINUTE ADS

SEND COPY TO OFFICIAL PROPOSAL DIVISION, ENGINEERING NEWS-RECORD, 330 W. 42ND ST., NEW YORK 18, N. Y.

OFFICIAL PROPOSALS

Bids: February 15, 1949 (829)

Improvements to Airport

Bids close at 10:00 A.M. on the 15th day of February 1949.

NOTICE TO CONTRACTORS: Sealed proposals for the construction of Schedules I and II of first stage improvements to Wold-Chamberlain Field in Minneapolis, Minnesota, will be received by the Minneapolis-Saint Paul Metropolitan Airports Commission at their office at 2429 University Avenue, St. Paul 4, Minnesota until the hour of 10:00 A.M. on the 15th day of February 1949, and will be publicly opened and read aloud immediately thereafter. The work includes grading, drainage, concrete surfacing, seeding, alterations to existing field lighting system and incidental work necessary for the extension to the north of the existing north-south runway in accordance with plans and specifications prepared by Toltz, King and Day, Inc., Engineers and Architects, St. Paul, Minnesota.

This work is the first of three construction projects at Wold-Chamberlain Field, totaling about $3,000,000 on which it is planned to award contracts during 1949.

Separate proposals are required for Schedules I and II which are general construction and electrical work respectively. Proposals shall be upon blanks furnished for that purpose.

The schedule of minimum wages as established by the Secretary of Labor and set forth in the Special Provisions are to govern on this project, and bids shall be based on these established minimum wage rates.

Each bid must be accompanied by a certified check made payable to the Minneapolis-Saint Paul Metropolitan Airports Commission in an amount not less than 5% of the total bid, or a surety bond in the same amount running to the Commission, with a surety company thereon as surety duly authorized to do business in the State of Minnesota, as a guarantee that the bidder if successful will enter into a contract with the Minneapolis-Saint Paul Metropolitan Airports Commission and give bond as required by law for the work described in the proposal, the amount of check or bond to be retained by the Commission in case he fails to so do. All proposal guarantees, except those of the two low bidders, will be returned within five days after the opening of bids. The proposal guarantee of the second low bidder will be returned within 10 days after the opening of bids.

No bidder may withdraw his bid for a period of thirty days after the date set for the opening thereof. The Minneapolis-Saint Paul Metropolitan Airports Commission reserves the right to reject any or all proposals and to waive informalities therein.

Plans and specifications are on file at the office of the Minneapolis-Saint Paul Metropolitan Airports Commission, 2429 University Avenue, St. Paul 4, Minnesota, and at the office of Toltz, King and Day, Inc., Engineers and Architects, 1509 Pioneer Building, St. Paul 1, Minnesota. Contractors desiring plans and specifications for personal use may secure them from the Engineers and Architects upon deposit of $20.00 for each set of plans and specifications. This deposit will be returned upon return of the plans and specifications in good condition within a reasonable time after the date of receiving bids.

Dated at St. Paul, Minnesota, January 14, 1949.

MINNEAPOLIS-SAINT PAUL METROPOLITAN AIRPORTS COMMISSION

By Robert Aldrich
Executive Director
2429 University Avenue
St. Paul 4, Minnesota

OFFICIAL PROPOSALS

Bids: February 24, 1949 (839)

Installation of Hydraulic Turbine, etc., and Transmission Line

COMMONWEALTH OF MASSACHUSETTS
METROPOLITAN DISTRICT
COMMISSION

Sealed proposals will be received at the office of the Metropolitan District Commission, 20 Somerset Street, Boston, Mass., until 1:00 P. M. Eastern Standard Time, Thursday, February 24, 1949, and then publicly opened for Contract No. 153 for the installation of a hydraulic turbine, generator, motor-operated disc valve, switchgear, substation, and appurtenances, and for the construction of a transmission line at and near Quabbin Aqueduct Outlet Works in the Town of West Boylston, Mass. The entire work consists of the removal of structural steel supports, handrails, gratings, partitions and other miscellaneous items; constructing concrete foundations and settings for the Oakdale Station Power Plant in the existing Outlet Works Building of the Quabbin Aqueduct; of installing an 84-inch motor-operated disc valve, a 5000-H. P. waterwheel, governor and appurtenances, a 4375-Kva generator with direct-connected exciter, switchgear, controls; of erecting an outdoor substation and selector switch structure, all furnished by the Commission; of furnishing and erecting a 66,000-volt transmission line, about 8800 feet long from the outdoor substation to the lines of the New England Electric System, and doing other incidental work appurtenant to the above installations and construction. Each bidder shall deposit cash or a certified check as security in the amount of $2500. A bond in at least the full amount of the contract will be required of each successful bidder to secure the faithful performance of the contract, and for the payment of all persons performing labor or furnishing materials in connection therewith. Special attention is called to the requirements as to conditions of employment to be observed and to the minimum rates of wages prescribed under the provisions of Chapter 461, Acts of 1935, by the State Commissioner of Labor and Industries, for the construction of this public work. A schedule of such rates is incorporated in the contract documents and is on file and may be obtained at the office of the Metropolitan District Commission. The information for bidders and the prescribed forms of proposal, contract, performance bond, and plans and specifications may be examined at the above address, and copies thereof obtained from Karl R. Kennison, Chief Engineer of the Construction Division, upon the deposit of $5, to be refunded only to bidders or to others returning them within ten days after the opening of bids. The site of the work and the existing conditions at and near the Outlet Works may be seen by applying at the office of the Head Construction Engineer, 107 Charles Street, Auburndale, Mass. The Commonwealth reserves the right to waive any informality in, or to reject, any or all proposals. No bidder may withdraw his bid within thirty days after the actual date of the opening thereof. A proposal which includes for any item a bid that is abnormally low or high may be rejected as unbalanced.

WILLIAM T. MORRISSEY, Commissioner
Jan. 27, 1949

OFFICIAL PROPOSALS

Bids: February 15, 1949 (828)

Substructure and Superstructure

KEYSER, W. VA.—McCOOLE, MD.
HIGHWAY BRIDGE

Sealed proposals will be received by the State Road Commission of West Virginia at it's office in Charleston, W. Va., until ten o'clock A.M., Tuesday, February 15, 1949, for the construction of the following projects:

Substructure and superstructure of the Keyser, West Virginia—McCoole, Maryland Bridge over the Potomac River on U. S. Route 220. Total length of Bridge approximately 2275 lin. ft.

Bids will be received on three parts of the concrete substructure viz: The West Virginia Approach, the main Abutments and Piers over the Potomac River and the Maryland Approach which will be awarded to the same contractor.

Principal Item 4600 Cubic Yards Concrete.

Likewise bids will be received on three parts of the Superstructure (furnishing and erecting steel only) viz: The West Virginia Approach, the main spans over the Potomac River and the Maryland Approach which will be awarded to the same contractor.

Principal Item 1600 tons Structural Steel.

State Road Commission of W. Va.
M. L. O'Neale
Chief Engineer

(Continued on page 134)

"I bid—"

THE moment you submit your figure on a contract job, you decide the outcome. You win or lose, on the figures you quote.

NATURALLY, material and time specifications must be met. You can't cut cost—or corners—here. But there *is* one spot in the bid that you *can* do something about. That is the efficiency of equipment or techniques you use.

TOO frequently, operating efficiency, resulting from technological improvements, gives one bidder a competitive advantage over the others. That is the hidden factor in every bid that needs constant watching.

THE advertising of equipment manufacturers should have a vital interest, therefore, for ALL Contractors — particularly those who bid on advertised Construction Contracts. It can pay you big dividends to check the ads in each issue.

OFFICIAL PROPOSALS
(Continued from page 133)

Bids: February 15, 1949 (825)

General Construction for Housing Project

SEALED PROPOSALS WILL BE RECEIVED at the office of the Municipal Housing Authority of the City of Schenectady, 402 Millard Street, Schenectady, New York, until 2:15 P.M., Tuesday, February 15, 1949 at which time and place the same will be opened and publicly read by the Municipal Housing Authority of the City of Schenectady, New York.

The sealed proposals are to be for:

Contract No. 5 —General Construction (Entire Project)
Contract No. 5A—General Construction (North Portion)
Contract No. 5B—General Construction (South Portion)
Contract No. 6 —Heating
Contract No. 7 —Electric Work
Contract No. 8 —Plumbing

for Housing Project N. Y. S.—34, Site A, located on the easterly side of Van Vranken Avenue in the City of Schenectady, New York.

The Contract Documents may be examined at the offices of—

F. W. Dodge Corporation, 119 W. 40th Street, New York 18, New York
Brown's Letters, Inc., 101 Park Avenue, New York 17, New York
Albany Builder's Exchange, 372 Hudson Avenue, Albany 6, N. Y.

The Contract documents may be examined at the office of the Municipal Housing Authority of the City of Schenectady, New York, or at the office of the Architects, Karas & van der Bogert, 126 Wall Street, Schenectady, Schenectady, New York, on and after January 15, 1949 and copies thereof obtained upon payment of $25.00 as a deposit to guarantee the safe return thereof. If a Proposal is duly submitted by any person or corporation making the deposit required, the full amount of such deposit for each set will be returned to such person or corporation, provided that the set is returned in good condition within thirty (30) days following the award of this contract or the rejection of the Proposal of such person or corporation.

Checks offered as payment for the documents must be made payable to the order of the Authority.

MUNICIPAL HOUSING AUTHORITY OF THE CITY OF SCHENECTADY, NEW YORK
WILLIAM H. DUNN, Chairman
JOHN MACGATHAN, Executive Director

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2541) will be received by Bureau of Reclamation, Coulee Dam, Washington, until 10 a. m., March 1, 1949, and then publicly opened for furnishing labor and materials and performing all work for the construction of earthwork, concrete lining, and structures, station 351+71 to station 1229+74, West Canal, Columbia Basin Project, Washington. Principal items in two schedules are approximately: 4,000,000 cubic yards excavation; 136,500 cubic yards concrete in structures and canal lining; furnishing and placing 1,945,000 pounds reinforcement bars; erecting 210,000 pounds steel bridges; installing 124,000 pounds gates and miscellaneous metalwork; and other work. Time allowed for completion will be 900 days. For particulars, address the Bureau of Reclamation, Coulee Dam, Washington; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(838)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2540) will be received by Bureau of Reclamation, Denver, Colorado, until 2 p. m., February 17, 1949, and then publicly opened for furnishing twenty-six main unit stop logs and one lifting frame for the Columbia Basin Project, Washington. Delivery is desired within 240 days. For particulars, address the Bureau of Reclamation, Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(836)

OFFICIAL PROPOSALS

Bids: February 16, 1949 (831)

State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Chapter 63 Laws of 1936, as amended, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on *WEDNESDAY, FEB. 16, 1949* by Henry A. Cohen, Director, Bureau of Contracts & Accounts, *14th* Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract containing 1 to 15 sheets is $5.00; 16 to 30 sheets, $10.00; over 30 sheets, $20.00. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 1				
		G. L. Nickerson, Dist. Engr., 333 Broadway, Albany, N. Y.				
Wash., N. Y. Rutland, Vt.	FARC 49-6 FAVT 49-1	Whitehall-Fair Haven, S. H. 1542 (Br. over the Poultney River) Project No. F1063(1)	0.54	Alpha $68.74 Steel & Conc. Deck 110' Asph. Conc. Opt. = 0 41 Mi. Conc. 8" Thk., 24' Wdt. = 0.13 Mi.	$15,000 Plans $5.00	$261,000
		DISTRICT No. 3				
		Wm. Robinson, Dist. Engr., Weigh Lock Bldg., Syracuse, N. Y.				
Cayuga	FASS 49-6	Oakwood-Half Acre Half Acre-Webster Cors. Project No. S230(1)	3.39	Asph. Conc. Opt. = 2.70 Mi. Conc. 8" Thk., 20'-24' Wdt. = 0.69 Mi.	$20,000 Plans $5.00	$348,000
Seneca	FASS 49-9 RC 49-11	Romulus Ctr.-Asbury Cors., Co. Rd. No. 148 Reservation Rd.-Varick, S.H. 321 Reservation Rd.-Fayette, S.H. 320 Project No. S791(2)	12.48	Asph. Conc. Opt.	$34,000 Plans $5.00	$803,000
		DISTRICT No. 4				
		A. R. Mulligan, Dist. Engr., Barge Canal Terminal, Rochester 1, N. Y.				
Monroe and Ontario	FASS 49-7	Honeoye Falls-Monroe Co. Line Monroe Co. Line-W. Farmington Project No. S240(1)	7.22	I-Beams 28½', 42½' Bit. Mac. Pen. Meth.	$25,000 Plans $10.00	$432,000
Monroe	LOSP 49-1	Lake Ontario State Park, Section A	4.26	Alpha $320 60 I-Beam 100' App. Spans, 2 at 68' each Fdn. Cnc. R. C. B. Gravel	$95,000 Plans $20.00	$1,655,000
Ontario	FARC 49-7	Dresden-Geneva, Pt. 2, S. H. 1704 Project No. F505(5)	5.24	I-Beams 41', 9' Widen 2 Span I-Beams, 68', 73' Conc. 9' Thk. 24' Wdt.	$40,000 Plans $20.00	$762,000
		DISTRICT No. 5				
		C. R. Wateas, Dist. Engr., State Office Bldg., 65 Court St., Buffalo, N. Y.				
Erie	FAC 49-1	Delaware Ave.: City of Buffalo Nottingham Ter. to Tacoma Ave. Proj. U1078(5)	1.11	Misc. Work = 0.66 Mi. Asph. Conc. Opt. = 0 45 Mi.	$14,000 Plans $5.00	$248,000
Erie	FARC 49-8	Orchard Park-E. Aurora, S.H. 1066, Proj. F1054(2)	0.40	Deck Girder 3 Spans, Tot. 236' Misc. Work = 0.08 Mi. Conc. 9" Thk., 24', 28' Wdt. = 0.32 Mi.	$17,000 Plans $5.00	$300,000
		DISTRICT No. 7				
		R. F. Hall, Dist. Engr., 444 Van Duzee St., Watertown, N. Y.				
St. Lawrence	FASS 49-8	Stockholm Ctr.-Lawrenceville, Pt. 1, Proj. No. S263(1)	6.01	Conc. slab, 37' 1-Beam 66', 93', 2 at 80' Alpha $248.42 Misc. = 0.03 Mi. Asph. Conc. Opt. = 0.12 Mi. Bit. Tr. Gravel = 5 86 Mi.	$45,000 Plans $20.00	$803,000
Jefferson	SH 49-5 RC 49-12	Woodville-Shore Road Ellisburg-Woodville, S. H. 8019	1.74	Thru Truss 240' Span Conc. 8" Thk., 20-24' Wdt.	$27,000 Plans $10.00	$485,000
		DISTRICT No. 8				
		J. S. Bixby, Dist. Engr., Pleasant Valley Rd., Poughkeepsie, N. Y.				
Ulster	RC 49-10	Saugerties-Village, S. H. 8601	0.13	Asph. Conc. Opt. Widening	$1,200 Plans $5.00	$21,000
Ulster and Sullivan	SH 49-4 SH 49-6 SH 49-7	Woodbourne-Ellenville, Pt. 1, 2A, 2B	10.94	I-Beam, 3 Span Total 197' I-Beam & Conc. Slab Total 91' Gravel Surf.	$75,000 Plans $20.00	$1,342,000
		DISTRICT No. 10				
		J. J. Darcy, Dist. Engr., Montauk Hwy at Little East Neck Rd., Babylon, L. I., N. Y.				
Nassau	FARC 49-13	North Hempstead Turnpike, S. H. 9018; Proj. F541(6)	0.41	Deck, Total Span 2144' Conc. Pavt.	$33,000 Plans $5.00	$567,000
New York	FACBE 49-3	Cross Bronx Expy. Cont. 2X (Highbridge Conn.) Proj. U1084(12)	0.22	Rigid Frame 87', 8' Conc. 9" Thk. 2 at 36'	$50,000 Plans $20.00	$1,003,000
Bronx and New York	FACBE49-4	Cross Bronx Expy. Cont. 3 (Washington Br. Alterations) Proj. U1084(13)	0.36	Alterations to Br. Conc. 3" Thk. 2 at 33'	$33,000 Plans $5.00	$555,000
Bronx	FACBE. 49-2	Cross Bronx Expy. Cont. 8A (Longfellow Ave.—(Harrod Ave.) Proj. U. 1084 (2)	0.39	6 Brs. Substructures total spans: 78', 71', 1396', 176', 388', 441', 9', 469' Grad. & Structs.	$200,000 $20.00	$3,375,400

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by cash, draft or certified check payable to the order of "State of New York, Commissioner of Taxation & Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders". When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. Tallamy
Supt. of Public Works

(Continued on page 155)

SEARCHLIGHT SECTION

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:
(Not available for equipment advertising)
$1.20 cents a line, minimum 4 lines. To figure advance payment count 5 average words as a line.
POSITIONS WANTED (full or part-time individual salaried employment only). ½ the above rates, payable in advance.
PROPOSALS, $1.00 a line an insertion

INFORMATION:
BOX NUMBERS care publication New York, Chicago or San Francisco offices count as 1 line additional in undisplayed ads.

DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

DISPLAYED—RATE PER INCH:
The advertising rate is $11.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches—to a page. E.N.R.

NEW ADVERTISEMENTS received by February 8th appear in February 17th issue subject to limitations of space available.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

WANTED—ENGINEERS, Architects, Draftsmen experienced in the design of sewers, sewage treatment plants, water treatment plants and industrial buildings. Also engineers to supervise construction. State qualifications, experience, salary requirements and date available. P-1155, Engineering News-Record.

WANTED—STRUCTURAL Engineer. Capable of designing simple structures in steel and reinforced concrete. Applicant must have several years of experience. Opportunity for top position. Give full details, salary and date available. P-7606, Engineering News-Record.

WANTED: EXPERIENCED structural and industrial designers. Seelye, Stevenson & Value, 101 Park Avenue, New York, N. Y.

STRUCTURAL DESIGNER. Unusual opportunity for experienced designer familiar modern highway bridge, and industrial building practice, to take charge of going organization. Give full details in first letter. P-7600, Engineering News-Record.

(Continued on page 136)

CONSTRUCTION EXECUTIVE WANTED

Permanent, responsible position with a prominent Construction Company open to a professional engineer with thorough experience in all phases of apartment, hotel, office and F.H.A. 608 type of building construction in New York City area. Must be capable of taking complete charge including the handling of projects from inception to completion. Must be fully familiar with estimating, specifications, preparation of bids, negotiating and award of contracts, job coordination and field inspection. Applicant must be under 50 years of age and have earned a five figure salary in present or previous position. Only those who can furnish highest credentials should apply. Write detailed qualifications including education, references, and salary desired. Applications will be held in strictest confidence.

P-7880, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

WANTED
Skilled Right of Way Men

to appraise and negotiate for acquisition of right of way for State Highways, in the following classification:

Right of Way Examiner I.....$3850-4815
Right of Way Examiner II.... 3480-4000
Right of Way Examiner III... 3174-3649

Immediate appointments may be made of qualified applicants on a temporary basis pending Merit System examination. Positions offer automatic increases in salary and liberal vacation, sick leave, and retirement benefits.

Applicants requested to submit complete record of education and previous right of way experience, with references, age and date available to:

L. W. KERN
RIGHT OF WAY ENGINEER
Maryland State Roads Commission
108 E. Lexington Street
Baltimore 3, Maryland

DESIGNERS
HIGHWAY and STRUCTURAL

Excellent opportunities for immediate permanent employment with a progressive organization. Experience preferred, but not essential, in engineering design for highways, bridges, water and sewage treatment plants. Engineers needed also with experience in writing specifications and reports for water and sewer projects.

Desirable working conditions at salary commensurate with ability. Write for application blank. All replies will be held confidential and *will be promptly acknowledged.*

CAPITOL ENGINEERING CORPORATION
DILLSBURG, YORK COUNTY PENNSYLVANIA

MASTER MECHANIC
WANTED

for concrete dam project in nearby Latin America; preferably experienced with cableway operation and maintenance; must be thoroughly experienced on heavy construction work. No tractor or road-building equipment experience needed. Give full information in first letter, including family status, experience record, salary expected and references.

P-7774, Engineering News-Record
330 W. 42nd Street, New York 18, N. Y.

POSITIONS VACANT
WANTED

Experienced estimator on fibre and multiple tile duct conduit construction, cast iron, steel and welded gas main construction, business with New England Utility Companies and Telephone Co. at least five years experience in this field, submit references, former employment, salary required. Contractor's Home Office, Boston, Mass. All work Greater Boston Area.

Position available at once or before March 15, 1949.

P 7881 Engineering News Record
330 W. 42nd Street, New York 18, N. Y.

WANTED
ENGINEERS AND DRAFTSMEN

STRUCTURAL STEEL
CONCRETE
ARCHITECTURAL
PIPING
CONVEYORS
ELECTRICAL
MECHANICAL

Applications are solicited from men experienced on heavy industrial projects by established company located downtown Manhattan, N.Y.C. Submit details of experience and references in reply.

P 7877 Engineering News-Record
330 West 42nd St., New York 18, N. Y.

Well Qualified

MECHANICAL DESIGNERS

are needed by

GENERAL ELECTRIC CO.

for responsible positions
in the new field of nucleonics

at

Hanford Works
Richland, Washington

operated by G.E. for the
U.S. Atomic Energy Commission

Experience must include a minimum of ten years actual drafting experience, the major portion of which has been mechanical, such as developmental design of heavy or semi-heavy equipment. Experience as a checker or lead designer is highly desirable.

Education requirements include college level mathematics up to calculus, strength of materials and mechanics.

Attractive Salary Rates

Write for Application

to

Employment Supervisor

GENERAL ELECTRIC CO.
Richland, Washington

CHECKERS AND DETAILERS FOR STRUCTURAL SHOP DRAWINGS

Top salaries for good men. Some overtime. Good working conditions. State age, experience, salary, and how soon available.

EMPIRE STRUCTURAL STEEL FABRICATORS, INC.
Syracuse, New York

WANTED

Civil Engineer or Supervising Contractor

To close and contract licenses with installers, contractors and applicators of special rubberized bituminous materials in great demand for buildings, roads, sewage disposal plants, etc.

Patents have been granted; grantee has pioneered in the construction field for over 30 years.

Commissions on sales either through your own specifications or effort, or dealer sales will be paid in the territory. Commissions remunerative and continuous. State territory you can cover; also do you specify materials on certain construction work.

RUBBERIZED OIL PLASTICS, INC.
82 W. Washington St. Chicago 2, Ill.

SALES ENGINEERS
WANTED

To sell well known, popular line of power shovels, excavators, and cranes, crawler and rubber mounted.
Preference given to thoroughly experienced men, for each of four (4) different locations, Syracuse, N. Y., Albany, N. Y., White Plains, N. Y., and on Long Island.
In applying, state fully your past experience and qualifications in detail, including education and age.
All applications will be held strictly confidential.

SW 7896 Engineering News Record
330 W. 42nd St., New York 18, N. Y.

WANTED—Mechanical and Structural Engineers For designing and detailing work on concrete reinforcement, structural steel and hangar door construction. Requirements are three to four years practical experience or recent graduation from technical school. Desirable working conditions and opportunities for advancement. These openings are with a nationally known steel fabricating company, located in eastern Ohio. Applicants will please submit a record of their qualifications. P-7737, Eng. N-R, 520 N. Mich. Ave., Chicago

---

POSITIONS VACANT

(Continued from page 135)

LARGE IRRIGATION and Power District in southwest has opening for a graduate engineer with at least five years experience in reinforced concrete and structural steel designing. Experience in irrigation diversion structures, small bridges and buildings highway desired. Please include complete record of education and experience in answering. P-7813, Engineering News-Record.

WANTED—YOUNG, Ambitious, assistant engineer by road and utility contractor. Westchester County. State qualification, experience and salary requirements. P-7830, Engineering News-Record.

WANTED—THOROUGHLY experienced estimator for building contractor specializing in public works and commercial buildings. Box 1565, Mobile, Alabama.

CONSTRUCTION SUPERINTENDENT for large alterations for chain stores. Out-of-town work. State qualifications. P-7810, Engineering News-Record.

MATERIALS ENGINEER—C.E., experience in highway materials, permanent, good salary and opportunity. Give full information. P-7838, Engineering News-Record.

CIVIL ENGINEER with five to ten years experience in hydraulic and sanitary fields. Must be capable of coordinating design and supervising preparation of plans and specifications of dams, hydraulic structures, waterworks plants, sewers and sewage treatment. Opening with consulting engineering firm located in a Midwestern city of 25,000 population. Excellent opportunity for a qualified engineer with proper personality to fit into an existing organization. Apply by letter. Include complete information on education and experience. P-7858, Engineering News-Record.

CIVIL ENGINEER, experienced for two-year contract Venezuela, S.A. on general construction and railroad work. Single status only. Write Iron Mines Co. of Venezuela, Bethlehem, Pa. stating experience, education, age, etc.

ESTIMATOR, EXPERIENCED in commercial, industrial and heavy construction. Salary according to experience and ability. The W. F. Hendrich Co., Inc., 775 Main St., Buffalo, N. Y.

WANTED—GENERAL Construction Superintendent on a large housing project. Must be good organizer and capable of assuming full responsibility of the actual construction as well as the coordination of all subcontracted trades. P-7843, Engineering News-Record.

EMPLOYMENT SERVICE

SALARIED PERSONNEL, $3,000-$25,000. This confidential service established 1927, is geared to needs of high grade men who seek a change in connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, 241 Orange St., New Haven, Conn.

SALARIED POSITIONS $3,500—$35,000

If you are considering a new connection communicate with the undersigned. We offer the original personal employment service (39 years recognized standing and reputation). The procedure, of highest ethical standards, is individualized to your personal requirements and develops overtures without initiative on your part. Your identity covered and present position protected. Send only name and address for details.

R. W. BIXBY, Inc., 272 Dun Bldg., Buffalo 2, N.Y.

POSITIONS WANTED

SPECIFICATIONS WRITER—Graduate Engineer, seven years experience in all types heavy construction contracts. PW-7604, Engineering News-Record.

SECRETARY (FEMALE)—experienced secretary desires position in engineering office, vicinity Poughkeepsie, N. Y., New York City or environ. PW-7771, Engineering News-Record.

CONSTRUCTION ENGINEER. Civil engineer graduate; age 31. Experience includes field supt. on large building project and carpenter and concrete foreman on various heavy construction projects. 3½ yrs. Navy Seabees officer. Presently building estimating. Desire association with reputable building-heavy construction contractor on field supervision with opportunity for progressive responsibility. Available upon two weeks notice. PW-7794, Engineering News-Record.

EXECUTIVE ACCOUNTANT—C.P.A. (NY) offers broad experience in accounting matters, taxes and office management. Age 46. Excellent references. PW-7814, Engineering News-Record.

CIVIL; SANITARY; Engineer. Registered, single. M.ASCE. Education: B.S. in C.E.; C.E.; M.C.E.; M.S. in P.H.E. Twenty years, construction engineering, teaching, and administrative experience. Now completing work. Desire new connection. PW-7783, Engineering News-Record.

HARD HITTING Construction Superintendent available now; age 41, married and 2 children, good organizer; not afraid of hard work; can handle men and obtain good results; go anywhere in United States; specializing large housing projects. PW-7801, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT and engineer, 17 years experience as superintendent and engineer on all types of buildings, bridges and highways, good record and producer, sober, married, can furnish excellent references, prefer mid west location, write, Alvin Lee, Box 343, Alexandria, Minnesota.

CONSTRUCTION EXECUTIVE — with broad managerial experience in heavy construction, some of which has been unusual in design and of difficult construction. Available about March 1st. Location preferably east or south. PW 7883, Engineering News-Record.

CONSTRUCTION PROJECT Manager—General Superintendent, 33 years experience, FHA 608 housing, public and commercial buildings. Good organizer and subcontract negotiator. Aggressive expediter. Licensed P.E. Salary $9000. Will travel. Available immediately. PW 7884, Engineering News-Record.

GRADUATE CIVIL Engineer, licensed N. Y. and N. J. 21 years experience design, construction sewers, sewage and water treatment plants, industrial buildings. Desired location N. Y. City or N. J. PW 7851, Engineering News-Record.

PROCESS AND Power Piping Engineer. 11 years domestic and foreign experience. Age 32. Single. Correspondence invited for position of responsibility. PW 7882, Engineering News-Record.

CONSTRUCTION SUPERVISOR — 25 years background, all phases, administrative, management, field supervision, estimating, purchasing, etc. housing, commercial and industrial projects. 206-17 43rd Ave., Bayside, New York.

ESTIMATOR—QUANTITY take off-Civil Engineer with 25 years building construction experience. PW-7890, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT 19 years experience in all types of government, commercial and industrial construction also experienced in estimating, purchasing, and expediting available March 1st. PW-7901, Engineering News-Record.

(Continued on page 137)

WHEN
Answering Advertisements

PLEASE *do not send original letters, certificates or photographs. We cannot be responsible for their return. Please send photostat or carbon copies.*

SEARCHLIGHT SECTION

A COURSE OF INSTRUCTION BY MAIL IN

STRUCTURAL ENGINEERING

Thirty-seventh Year

(In the following list, Courses A, B, and C are abbreviated from our complete Structural Engineering course).
A—Public Works Structures.
B—Architectural Engineering.
C—Special Course (State Board Exams. for P.E.)
D—Structural Engineering (complete).
E—Preparatory Course (for non-technical men).

Our Courses are offered principally to ADULT CIVIL ENGINEERS AND ARCHITECTS

Ninety percent of our engineering students are former graduates (C.E.) from engineering colleges. Our courses have helped thousands of engineers to better positions, increased pay, and success "after forty".

Course B has helped many architects and draftsmen in passing the structural portion of State Board Examinations for license.
Literature sent without expense or obligation. Deferred payments permissible. Write TODAY.

WILSON ENGINEERING CORPORATION
College House Offices Harvard Square Cambridge, Mass., U. S. A

FOR SALE

1 Lorain shovel 80, purchased Jan. 1948
1 Manitowoc model 3000B, new 1948 2 Yd. shovel with D-17000 caterpillar engine.
2 End dump trucks model 49FD, purchased new 1948.

FS 78 4, Engineering News-Record
330 West 42nd St., N. Y. 18, N. Y.

FOR SALE

(2) 5' x 24' Asphalt Dryers Complete
(1) Cyclone Dust Collector System with Dust Washer
(1) 80 H.P. Boiler with 50 H.P. Steam Engine

THOMAS GALLO
32 Woolsey Street Irvington, N. J.

POSITIONS WANTED
(Continued from page 136)

SUPERINTENDENT: HEAVY construction or housing. PW 7869, Engineering News-Record.

SELLING OPPORTUNITY WANTED

SALESMAN, 40, experienced in construction and industrial machinery, present territory maritime provinces and Newfoundland. First class personal ability and business references. Available March 15th. SA-7711, Engineering News-Record.

PATENT ATTORNEY

Patent Practice

before U. S. Patent Office. Validity and infringement investigations and opinions. Booklet and form "Evidence of Conception" forwarded upon request. Lancaster, Allwine & Rommel, Registered Patent Attorneys, Suite 454, 815-15th Street, N.W., Washington 5, D. C.

Napoleon once said
"An Army Marches on Its Stomach"
We Have Fed Millions

KANE INDUSTRIAL SERVICE

Industrial Feeding.
Labor Camps.
Labor Camp Equipment.
Free Employment Agencies.
30 Years' Experience in the Housing and Feeding of Men for Satisfied Clients.
Abundant Labor Supply available for Large Projects Anywhere.

VALENTINE B. KANE & ASSOCIATES
1410 State St. New Haven 11, Conn.

LEARN TO ESTIMATE

Today, more than ever before, you must know how to analyze building costs. If you want to become a successful builder, learn how to prepare a correct estimate in a hurry. Get in on the profitable work now available wherever you turn. Your success is assured if your estimates are right; otherwise you are licked before you start.

The Tamblyn System of Estimating will make a real estimator out of you in a few weeks of your spare time. We are so sure that you will want to learn it, that we will send you our complete home study course for ten days examination absolutely free. If you don't think it is the finest thing you ever saw, just return it and it won't cost you a cent. If you like it and want it, send us $8.75 when 10 days are up and $7.50 per month until $38.75 is paid.

This estimating system is based on forty years of actual construction experience. It has been sold all over the world for more than twenty years. Thousands of estimators and contractors swear by it. Our offer isn't hot air and big talk. We don't give you a diploma or a lapel button, but we do teach you down to earth estimating which will bring you profitable business.

Just send your name and address today, and we will mail you the complete course at once for your approval.

TAMBLYN SYSTEM
1115 So. Pearl St., E-261
Denver, Colo.

FOR SALE

Complete well point system consisting principally of 4—10" Diesel Jaeger Pumps, 2050 feet of 8" header pipe, 500 riser pipes, 3200 feet 10" and 12" discharge pipe, gate valves, etc. Ready for use.

J. E. LATTA CONSTRUCTION CO.
Wood River Dam Project
Box 76, Wood River, Illinois

WANTED

(Additional Wanted Ads on page 152)

WANTED

1 Used
Hot Asphalt Plant
400 Ton Capacity
Located New York Metropolitan Area.

W7861—Engineering News-Record, 330 W 42 St., New York 18, N. Y.

WANTED

Contractors desiring to do resealing work of expansion, contraction and other types of cracks in paving and monolithic construction with rubberized bituminous material ZERO-LASTIC, a compound which will maintain seal at zero degrees temperature—a lucrative contracting business. For particulars, write to:

RUBBERIZED OIL PLASTICS, INC.
82 W. Washington St. Chicago 2, Ill.

WANTED

Model 32
Parson Backfiller

HYPER-HUMUS COMPANY
Box 263, Newton, New Jersey

FOR SALE

Contracting business, road building, land clearing, excavating, etc.
Completely equipped with good machinery, now operating.

Write P. O. Box 713 Little River Sta. Miami, Fla.

WANTED

Type C Insley Pull Shovel or Backhoe attachment. Write us giving location, price and Condition.

CEMENT ASPHALT PRODUCTS CO.
Box 1004, Winfield, Kansas

WANTED

Large engineering firm wishes to acquire several complete plants through purchase of (1) capital stock, (2) assets, (3) machinery and equipment, whole or in part. Personnel retained where possible, strictest confidence.

Box 1206,
1474 Broadway, New York 18, N. Y.

FOR SALE

THREE WORTHINGTON HORIZONTAL DUPLEX HOT OIL PUMPS

23 x 5 x 24, with forged steel liquid ends, rated 750 pounds square inch discharge pressure. Used in refinery operation. Good for irrigation projects, plastic industry, paper plants. Good condition.
R. H. Armstrong, Republic Oil Refining Company, Texas City, Texas.

WANTED TO BUY

38 and ½ yard clam shell bucket, A-1 condition; price right. One (1) 45" lifting magnet. 230 volt. Phone FEderal 3383, or write

COLUMBIA METAL & IRON SCRAP CO., Inc.
Corliss Station, Pittsburgh 4, Pennsylvania

"H" FOR MODERN EQUIPMENT

STEEL STORAGE BINS—HOPPER TYPE—1—66' long, 16' wide, 10'6" high straight side, 6'6" height of hopper, 6 compartments.
1—11' long, 8'9" wide, 10" high straight side, 6'6" height of hopper, 2 compartments.
1—88' long, 12' wide, 7' high straight side, 6' height of hopper, 8 compartments.
3—34' long, 12' wide, 6'6" high straight side, 9' height of hopper, 4 compartments.
1—22' long, 11'6" wide, 7'3" high straight side, 6'3" height of hopper, 4 compartments.

OLIVER FILTER SYSTEM 5'4"x6', complete with pumps and vacuum system.

AIR COMPRESSORS 8—Chicago Pneumatic, 12"x10"NSB, 266 CFM, 100# pressure.

BOILER PLANT Complete, Erie City, 604 HP, 180 PSI, ASME code and Natl. Board. Pulverized coal fired.

CONVEYORS—BELT—1—24" Flat 30' centers and drive.
1—Barber Greene complete loading conveyor, 24", 18' troughing type with rails and drives.
1—30" 65' centers, stainless steel belt with reducer and 5 HP, TEFC Motor.

CRUSHERS 1—2-roll 3⅜"x10½" with rect. teeth. 2-roll spiked Bartlett & Snow. Unused.
1—Jeffrey Swing Hammer Pulverier 36"x24", type A-2 with 50 HP, TEFC motor.
1—Gruendler, Jaw, 10"x16" belt driven.

FULLER KINYON SYSTEM—Type HS Pump with Motor and Feed Hopper, hilow system, 250' 4" pipe and 8—3 way motorized valves.

PUMPS 1—Stokes, Hi-Vacuum Pumps, 100 cu. ft. V-belt driven.
1—Frederick Iron & Steel Co. size 8" DSV-SM, nickel iron casing, stainless steel trim. 2500 GPM, 150' head, complete with 125 HP, TEFC Motor and Control Panel.

STACKS 3—5'3"x110', ⅜" and 5/16" plate with reinforcing bands.

TANKS Absorber, vert., 22'x90', 5/16" & ⅜" (2 avail.)
Storage, vert., 12'6"x45', 5/16" & ¼" (2 avail.).
Blow-off 6'6"x10', 100# hydrostatic test, ASME code.
Slurry, 12,000 gals., 12'0" dia. x 12'3" straight side, 6'-1" height of cone, 5/16" plate.
5,000 gal. hor. 6'1"x24'x½".
5,000 gal. hor. 6'x23'7"x5/16" (NEW).
4,000 gals. hor. 6'x20'x5/16" (2 NEW).
3,500 gals. hi-chrome 77"x10'x⅜". (Unused.)
2,300 gals. hor. 5'x15'x½".
750 gals. vert. 5'x8'x½" open.

WELDERS 300 and 400 amps., G. E. & Hobart, 3/60/220/440, rebuilt and guaranteed. New 1943. (200 available.)

Heat and Power Co., Inc.
70 PINE STREET — DIGBY 8-0373 — NEW YORK 5, N. Y.

SALE or RENT

1—10-ton Huber 3-Wheel Gas-Roller. Hydraulic Steer
1—MC-4 Lorain Moto Truck Crane. 1944
1—205 Koehring Gas Shovel
1—503 Koehring Diesel Dragline. 1942
1—82 Lorain Diesel Combination Shovel and Crane. 1942
1—P & H 855 Shovel, 2 yd. D-17000 Engine. 1946
1—35-ton Vulcan Std. Ga. Diesel Locomotive. New 1938
1—65 Ton Whitcomb D.E. Loco—1943
1—15 Ton Industrial Gasoline Loco Crane
1—80 Ton Lima type 0-6-0 Switcher. New 1944

B. M. WEISS COMPANY
Girard Trust Co. Building, Philadelphia 2, Pa.
Rittenhouse 6-2311

1 Model 514 Unit crane, full crawlers
1 Model 30 Hanson crane, full crawlers
1 T-40 International bulldozer
1 R-5 Caterpillar bulldozer, LaPlante Choate
Ingersoll-Rand Jack Bits $25 per hund.
1 Ingram stiff leg derrick with Case power unit
1 Hayward ¾ yd. fork or grapple bucket
1 Buffalo-Springfield three-wheel road roller 3½-5 tons

SEARS & BOWERS
Fourth & Spring Garden Sts. Easton, Pa.

FOR SALE
FLAT CARS

10—Standard Gauge 50-ton capacity, 40 ft. long, steel underframe, fish belly side and center sills, cast steel truck side frames, rolled steel wheels, interchange condition.

EQUITABLE EQUIPMENT CO., INC.
410 Camp St. New Orleans, La.
Phone RAymond 9744

FOR SALE

1—P & H Truck Crane Model 255A, ser. no. 7005, with 80' main boom and 30' jib, mounted on ten wheels, pneumatic tires, with outriggers.
1—Link-Belt Truck Crane Model TC-70, ser. no. 8091, with 80' main boom and 30' jib, mounted on ten wheels, pneumatic tires, with outriggers.
Chicago Pneumatic 500 CFM Air Compressors, Caterpillar Diesel driven, mounted on 4 wheels, pneumatic tires.
Chicago Pneumatic 315 CFM Air Compressors, Caterpillar Diesel driven, mounted on 4 wheels, pneumatic tires.
Ingersoll-Rand 105 CFM Air Compressors, gasoline driven, mounted on Chevrolet trucks.
Chicago Pneumatic 105 CFM Air Compressors, gasoline driven, mounted on 2 wheels, pneumatic tires.
Unused Jaeger double drum hoists, driven by Waukesha 30 HP gasoline engines.
Lidgerwood double drum hoists, driven by 75 HP gasoline engines.

All the above equipment is for sale

A & P EQUIPMENT CO.
1230 Randall Avenue Bronx 59, N. Y.

GRADERS

1—Warco, Model V-35 I, Serial V 354566, Motor Oliver "38", #900290 M, year 1942, Tandem Drive, Rebuilt 1948, Weight 17,000#, Hyd. Control, Electric Starter, Lights and Cab.
1—Galion, Model "G", Serial No. 15124A, Tandem Drive, Power Case Model LI #329980, Rebuilt 1948, Weight 19,000#, Hyd. Control, Electric Starter, Lights, Cab and Scarifier.
1—Caterpillar #12, Serial No. 9K 2114 S.P., Diesel Power, Electric Lights, Scarifier. Excellent Condition.

BESTER-LONG COMPANY
439-441 S. Potomac St. Hagerstown, Md.

FOR SALE
SHOVEL

1—Marion Model 342 1 yd. shovel with 60 ft. dragline boom and fairleads, crawler mounted, Caterpillar Diesel D-11000 Engine, 2½ yrs. old, used very little, is like new.

Several other good buys from ⅜ yd. to 1¼ yd. Shovels, Hoes, Cranes.

EUGENE P. READING, INC.
Walnut St. & B&O R. R., Phone 4-0200
ROSELLE, N.J.

FOR SALE

1—Austin Western, Model 99M Auto Patrol Grader, equipped with International Diesel engine, 4—14x20 tires and scarifier.
1—Link Belt Model L.S. 50 with shovel front. This machine is practically new.

VILBRO EQUIPMENT CO.
233 North Avenue Westfield, N. J.

FOR SALE OR RENT

Complete highway paving outfit. Paver, finisher, spreader, forms, bins, roller, subgrader, formtamper etc etc.

FOR SALE

Jaeger 16 EL Mixer 340 C. F. Compressor rubber tired roller, pumps 2" to 12", 5 K.W. light plant, Lorain 40 with shovel, dragline & backhoe attachments.

L. F. Collignon
916 W. 1st St. Davenport, Iowa

FOR SALE

Bucyrus-Erie mod. 54B 1948 Dragline.
Bucyrus-Erie mod. 38B 1948 Comb. Backhoe & Drag.
Bucyrus-Erie mod. 33B Dragline.
Bucyrus-Erie mod. 22B Comb. Backhoe & Drag.
Bucyrus-Erie mod. 10B Comb. Backhoe & Drag.
Northwest mod. 41 Dragline.
Northwest Mod. 7 Dragline.
Link Belt mod. LS-85 Comb. Shovel & Drag.
Caterpillar mod. D16 High-Lift.
Caterpillar mod. D-4 High-Lift.

L. M. KELLER & SON
133 N. Ridgeland Ave. Oak Park, Ill.

L.B.SMITH INC. OFFERS

AIR COMPRESSORS

Worthington two-stage, water cooled, vertical 250#, 60 CFM, new condition.
Gardner-Denver, 105 foot, with air receiver, hose reel, driven by power take-off and mounted 1941 Ford.
Gardner-Denver air-cooled 105 foot with receiver, V-Belt driven from power take-off and mounted on 1942 Ford chassis with Wood two-yard dump body.
Gardner-Denver two-stage 160 ft., skid mounted.
Worthington 210 cubic foot, two-stage air-cooled, on steel wheels with Hercules diesel.
Chicago Pneumatic 210 cubic foot, two-stage, air-cooled, Caterpillar diesel on four rubber tired wheels.
Gardner-Denver 315 cu. ft. two-stage, skid mounted, Murphy four-cylinder diesel.
Pennsylvania 12" x 10" class 3A single cylinder, 355 cubic foot P.D., flat belt driven, 50 HP slip ring motor.

QUARRY EQUIPMENT & BINS

18 x 36 Farrell deep jaw crusher, with McLanahan 3' x 7' roll type feeder.
10 x 20 Champion No. 4½ primary jaw crusher
10 x 7 Allis Chalmers Blake type jaw crusher.
Williams 20-S pulverizer.
100 ton 3 compartment storage or aggregate bin with or without batcher and scales.
60 ton 2 compartment storage bin with clam shell gates.

ELECTRIC MOTORS

New & Rebuilt—All Sizes
3 to 125 HP in stock
Open and Totally Enclosed

TRUCKS—TRAILERS

1½-ton Ford & Chevrolet.
2½-ton GMC. New and rebuilt.
Van Trailers with 17'x7'8"x6' bodies. Five ton capacity.
2,000 gallon tanks on semi-trailer mounting. New and rebuilt dump bodies.

GASOLINE AND DIESEL ENGINES

New JXD Hercules Gasoline.
Buda, Hercules, Hill diesels, rebuilt.
New Murphy 4 and 6 cylinder diesels.
GM 6 and 12 cylinder diesels, practically new.
New Cummins 6 cylinder diesels for Euclids.

DIESEL GENERATORS

7½ KW to 125 KW. Alternating and direct current.

SHOVEL

Osgood 1¾-yd diesel powered shovel with 23' boom, 17' dipper stick, 1¾-yd dipper D13000 diesel engine. Excellent condition.

SHOVEL ATTACHMENTS

Lorain 30A chain crowd, LBS#5142, 16' boom 13'4" stick ½-yd dipper.
Lorain 40 cable crowd, LBS#3989, 18' boom 14'4" stick ¾-yd dipper.
Lorain 40 Hi-Lift, 25' boom 19'8" stick LBS#5877, new ¾-yd dipper LBS#7750.
Lorain 40 chain crowd, LBS#4395, 16' boom 14' stick ¾-yd dipper LBS#7433.
P&H 203A, LBS#2527, 19'6" boom 13' stick ⅝-yd dipper.
Bucyrus-Erie 30B tunnel front 9' stick 1½-yd dipper LBS#3392.
Koehring 502 with necessary parts to convert from crane to shovel, 21' boom 16' stick 1¼-yd dipper.

DRAGLINE FAIRLEADS

New Osgood ½-yd Model 200.
Rebuilt Lorain 40, ¾-yd, LBS#6860.
New Lorain 40, ¾-yd, LBS#7459.

BACKHOE BUCKETS

¾-yd Lorain, 40, LBS#6105, 44" cutting width, teeth, sheave.
27" outside width drop bottom type LBS #1033, good condition.
26" outside width solid bottom type LBS #4377, good condition.

NEW TAGLINES

McCaffrey Model 636 for ½ to 1¼-yd crane.
McCaffrey Model 648 for 1¼ to 2-yd crane.

SHOVEL DIPPERS

Lorain 27, ⅜-yd, LBS#4658.
Lorain 27, ⅜-yd, LBS#4912.
Bucyrus-Erie 20B, ¾-yd, LBS#3801.
Lorain 41, ¾-yd, LBS#7433, new condition.
New Lorain 41, ¾-yd, LBS#6225, teeth, bail.
New Lima 1-yd, Amsco, LBS#2295.
Bucyrus-Erie 1¼-yd gas air, LBS#3782, fair.
Lorain 75 manganese 1¼-yd, LBS#7233, teeth & bail.
Lorain 75B, 1¼-yd, extended lip, 1¾-yd, LBS#2260.
Pettibone-Mulliken 2-yd Lorain 82 or 820, manganese, LBS#5361.
Pettibone-Mulliken 2-yd for 3500 Manitowac LBS#6153.
Pettibone-Mulliken 2-yd for 3500 Manitowac LBS#5763.

CONCRETE ROAD BUILDING & MISCELLANEOUS CONCRETE HANDLING EQUIPMENT

Pavers & Mixers

Ransome 34E dual drum, new October, 1943, with 36'9" boom, 1000 gallon auxiliary water tank, Cummins engine, rebuilt.
Jaeger Model 14DL, non-tilt mixer, rebuilt.

Concrete Finishers

Jaeger type "L" double screed, 10½'-12½" rebuilt.
Heltzel 10'-12' finisher, rebuilt.
Blaw-Knox gas-electric 10½'-12½', rebuilt.
2 Koehring 10'-12', rebuilt.
Koehring 10'-16' finisher, rebuilt.

Concrete Spreaders

Blaw-Knox type SA 10'-15' spreader new 1943. New condition.

Concrete Road Forms

780'—Truscon 7"x8" forms, with stakes.
2450'—Heltzel 7"x8" forms, with stakes.
4290'—Blaw-Knox 8"x8" forms, with stakes.
2030'—Heltzel 10"x8" forms, with stakes.
1760'—Blaw-Knox 10"x8" forms, with stakes.

Fine Grade Machines

Flynn surgrader 10'-12', rebuilt.
R.B. Fine Grader for 21' width, rebuilt.

Form Graders—2 of each

Cleveland formgrader, new condition.
Carr formgrader, new 1944, rebuilt.

BELT CONVEYORS

New 18"—24"—30"—36"
- "Sealed-for-life" idlers
- Lattice or channel frame
- Shipment from stock depending on length

CLAM—DRAG—SCRAPER BUCKETS

GRADERS

Caterpillar 44 hydraulically operated drawn grader, 12' blade, wt. 8,300 lbs.
York Corporation Model SR drawn grader with scarifier, 8' blade, rakes, pneumatics, wt. 7,900 lbs.

DIESEL POWERED TRACTOR

"FD" Cletrac with Buckeye blade and double drum P.C.U.

Phone HARRISBURG, PA. 5-7331

LASTING • BONAFIDE • SERVICE
L.B.SMITH, INC.

L.B.SMITH INC. CAMP HILL, PA. SUBURB OF HARRISBURG

WE OWN THE EQUIPMENT WE ADVERTISE

SEARCHLIGHT SECTION

SHOVELS, CRANES, DRAGLINES

Buc-Erie 120B, ⅝ yd. Elec. Shovel.
Buc-Erie 120B, ⅝ yd. Steam Shovel.
Bay City 65, Gas Shovel, 1¼ yd.
Buc-Erie 22B Dragline, Diesel.
P&H 1225 2¼ yd. Electric Shovel.
Northwest 80 2½ yd. Shovel-Dragline.
Lima 1201 Diesel Drag. 3½ yds.
P&H 855B 2 yd. Diesel Shovel.
Link-Belt K-580 2½ yd. Shovel-Drag.
Link-Belt K 375 Crane-Dragline, Diesel.
Marion 362, 1¼ yd. Diesel Shovel.
Marion 37 Electric Shovel 1⅝ yds.
Marion 90 steam crane-pile driver.
Northwest 6, 1½ yd. Diesel Shovel.
Northwest 6 Diesel Drag. 1⅛ yds.
Buc-Erie 37B, 1⅛ yd. Diesel Shovel.
Buckeye 70 ⅜ yd. Diesel Shovel-Drag.
Lorain 40, 15 ton Truck Crane.

ROAD CONTRACTORS EQUIP.

Finisher Koehring Long. 20'–24'.
Finisher Blaw-Knox 10'–12'.
Port, 500 CFM Diesel Air Compressor.
Rooter 5½ ton LaPlant-Choate.
Blaw-Knox Concrete Spreader, 20'x24'.
Cat. 12 road grader 8K series.
Rooter LaPlante-Choate 3 tine RP.
Road Forms 8000 ft. 9"x9". Other sizes.
Cat. No. 11, Motor Patrol Grader.

ASPHALT PLANTS

B-G Bit. Concrete Model S4S Mixing.
Cedar Rapids "Speedline".
Cedar Rapids Portable 20 Ton per hr.
Cedar Rapids 4000 Model E Portable.

Complete Plant Liquidation - Spot Delivery

SHOVEL:

Bucyrus-Erie Model 54B 2½ yd. Diesel Shovel.
Koehring Model 304 ¾ yd. Shovel. Diesel powered. New 1946.

CRANE:

Bucyrus-Erie Model 15B crane, new 1943, in rebuilt condition.

TRACTORS:

Caterpillar D8, 2U series, about one year old, with D.D.P.C.U. and angledozer blade.
Caterpillar D8, 5R series, D.D.P.C.U. and angledozer blade.
International TD18, with LeTourneau double drum unit. New in late 1946.
Allis-Chalmers HD14C, equipped with D.D.P.C.U. and pusher block. New July, 1947.
Allis-Chalmers HD-19H with angledozer blade. New July 1948.
Int. TD18 with Heil angledozer Trail Builder with D.D.P.C.U. New Nov. 1947.

GRADERS:

Warco Motor Grader, new September 1947.
Adams Motor Grader, new September 1947.
Austin-Weston 99H New Nov. 1948. Int.-UD14 Diesel Engine.

EUCLID REAR DUMP TRUCKS:

Model 31FD New January 1946. **Model 27FD** New April 1946.
Model 27FD New April 1946. **Model 27FD** New November 1946.
NOTE: Must be sold as ONE UNIT.

TOURNAPULLS:

4 LeTourneau Super C Tournapulls with LaPlant-Choate scrapers.
3 LeTourneau 10 yd. Rock Wagons.

AIR COMPRESSORS:

2 Ingersoll-Rand 315 cu. ft. compressors, gas operated, new June 1946.

WAGON DRILLS:

2 Ingersoll-Rand Model 5M2 Wagon Drills. New June 1946.

READY MIX CONCRETE PLANTS

B-K 105 tons Ag. bin, 200 bbls. Cement Bin. Complete with Weighbatchers.
Butler complete ready-mix concrete plant 105 ton Agg. Bin 300 bbl. bulk cement bin.
Johnson complete ready-mix concrete plant 120 ton Agg. Bin 350 bbl. bulk cement bin.
Johnson 500 yd. Batcher plant; 3 compts. aggregate one for 500 bbl. cement. Excellent condition.
Butler Plant 300 T.aggr. 400 bbls. cement
Butler 300 ton 3 comp. bin has 1 compt. for 400 bbls. cement, complete with weighbatcher, bucket elevator, etc.
Blaw-Knox 3 compt. 100 ton agg. Bin.

TRANSIT MIXERS, PAVERS, ETC.

Adnun Black Top Paver 10'–12'.
Pumpcretes, 160-180-190-200.
Ransome stationary Concrete Mixer 84S.
Multifoot 27-E, paver, rebuilt.
Rex 34E Dual Drum Paver.
Koehring 28-8 Mixer, Gas Operated.
Rex 34E dual drum Paver. Like new.
Rex 27E Paver. Good condition.

DERRICKS—STEEL & STIFF-LEG

Derrick & Hoist 75 tons stiff leg.
American Terry stiff-leg 50 tons 90' bm.
American Terry, stiff-leg 10 tons, 75' bm.
Kelley 25 ton Guy, 100 ft. mast 90' bm.
Insley Guy 20 tons, 115' mast, 90' bm.
Wiley 30 ton Steel Stiff-leg, 60' boom.
Steel Guy 25 tons 110' mast, 100' bm.
Steel Guy, 25 tons, 125' mast, 115' bm.
Steel Stiff-leg 25 ton, 3 drum Elec. hoist.

30 CHURCH STREET Cable "RICHWALSH" New York **RICHARD P. WALSH CO.** Telephones: Cortlandt 7-0723 7-0724 **NEW YORK, N. Y.**

AIR COMPRESSORS

110-315, 420, 663, 1,000 Ft. I-R Diesels
110, 160, 220, 310 & 600 Gas Portable
2—676', 850', & 1350 Ingersoll Rand XCB Bltd
1300 ft., 1572 & 2850 & 5011 Ing. Rand Elec.
Low Press: 743, 1200, 1500, 2600 & 5600 ft.

CRANES—DRAGLINES

1 Yd., P. & H. 600 50' Boom Crane
8—45 Ton & 25 Ton Cap. 100 Ft. Boom Whirleys with or without Gantrys, Steam Elec. Diesel
2 Yd. Monighan 60' B. Elec. Dragline
16 Yds. 100 Ft. Boom Elec. Dragline
1½ Yd. 42B Bucyrus Steam 50 ft. Boom Crane & Shovel
1½ Yd. P. & H. Model 700B Dragline & Shovel
1—7 Yd. Cap. Marion Diesel Dragline
1—6 Yd. Cap. B.E. Monighan Diesel Dragline

CRUSHING PLANTS

24 x 30 Portable 50-75 Ton Per Hr. Cap.
25 x 36 Portable 100 Ton Per Hr. Cap.
24 x 36 & 36 x 48 Traylor Jaw Crushers
36 x 48 Traylor Jaw Crusher
1—40 x 48 in. & 1—42 x 54 in. Buchanan Jaw Crushers

ROLLERS

12 Tandem & 3 Wheel 3, 5, 8, 10 & 15 ton

DRILL SHARPENERS

7—I-R. Models 40 & 54

DUMP CARS

136 TUNNEL CARS ½ Yd., 2 Yd. & 4 Yd. Cap.
40—12 Yd., 20 Yd. & 30 Yd. St. Ga. Air Dump
20—12 Yd., Western 5 ft. ga.

HOISTING ENGINES

STEAM: 14x12, 9x10, 8½x10 & 7x10
ELECTRIC: 30, 40, 60, 80, 100, 125 & 150 H.P.
GAS & DIESEL: 15, 40, 75, 90, 110 & 140 H.P.

LOCOMOTIVE CRANES

25 Ton American Steam & 3—20 Ton Ohio
35 Ton Industrial Broadhoist, Diesel
50 Ton Industrial Broadhoist, Steam

LOCOMOTIVES

33—Steam—40, 60, 110 & 220 ton
14—Diesel—15, 25, 45, 65 & 80 ton
44—Gasoline—4, 6, 8, 12, 16, 25 & 35 ton
16 Ton Vulcan Std. Ga. Gas

PAVERS—MIXERS

5—27E & 34E Dual Drum Pavers
16—¾, 1, 2 & 3 Yd. Mixers

PILE HAMMERS & EXTRACTORS

9—McKiernan-Terry No. 1, 2, 5, 6, 7, 9B2, 10B3
Vulcan 800 Extractor & Vulcan #2 & 1 Hammers
5 VULCAN 50c & 80c Hammers
Vulcan Model 5000 Super Hammers
3 United Model 1A & 1½A Hammers

PUMPCRETE

Model 160, 190 & 180 & 200 REX Pumpcretes

R R CARS

140—Flat Cars 30-40, 50 ton
20—Gondolas 40 & 50 ton
60—40 Ton Cap. Box Cars
126—8000 & 12000 gal. Tank Cars

ROCK GRAPPLERS

7—Owen & Blaw Knox 3 ton, 5 ton & 15 ton Cap.

SHOVELS

1¾ Yd. 41B Bucyrus Steam
1—17 Yd. Cap. Bucyrus Erie Elec. Shovel
2—10 Yd. Cap Marion Elec. Shovels
1—8 Yd. Cap. Marion Elec Shovel
1—5 Yd. Cap. Marion Elec. Shovel
1—4 Yd. Cap. Marion Diesel Shovel
5 STEAM SHOVELS—3½, 5, 6 & 8 YD.
2—4 Yd. Marion Elec.

STEEL DERRICKS

7 Ton Steel Stiff Leg 40 Ft. Boom
2—Clyde 15 Ton Stiff Leg 100 & 125' Boom
2—Terry 25 Ton 100' Boom Guy Steel Erectors
3—7-10 Ton Guy 85' & 90 Ton 100'

ORANGE PEEL BUCKETS

56—1/3, ½, ¾, 1 Yd., 1½ & 2 Yd.

STORAGE TANKS

14—5,000, 35,000 & 80,000 bbl. cap.
17—8000-15000 & 25000 & 42000 gal. cap.

TUNNEL EQUIPMENT

CONWAY Muckers 20A, 30A, 50A, 60A & 75
18 Battery Locomotives, 3, 5, 6, & 8 ton
GD9—Mucker & No. 21 Elmco

Want to Buy All Types Contrs. Equipt.

R. C. STANHOPE, INC.

Telephone: MUrrayhill 2-3076
60 E. 42 St. **NEW YORK, N. Y.**

GMC • STUDEBAKER • REO
OWNERS

- **New double strength trunnion shafts with brackets and bushings.**
- **New rear axle drive shafts.**
- **New and slightly used six cylinder engines.**
- **Also many other parts for same.**

CONSTRUCTION EQUIPMENT & TRUCKS

L. B. SMITH, INC.
Harrisburg 7331 **Camp Hill, Pa.**

DIESEL TRACTORS

USED—*Immediate Delivery*

One International Harvester TD-18 tractor with Bucyrus-Erie Hydraulic Bullgrader and Bucyrus-Erie P-24 Winch. Southwest 18' crane boom attached. Excellent condition. One International Harvester TD-9 tractor with Bucyrus-Erie Hydraulic Bulldozer. Excellent condition.

EDWARD EHRBAR, INC.
29 Meserole Avenue Brooklyn 22, N. Y.
Evergreen 9-5570

FOR SALE OR RENT

Rebuilt Northwest Model 25 Truck Crane mounted on 10 wheel Mack complete with outriggers.

HODGE & HAMMOND, INC.
1162 Grinnell Place
New York 59, N. Y.
Dayton 9-5300

Pile Driving Equipment

Vulcan and McKiernan-Terry
Steam Pile Hammers and Extractors
Pile Driving Accessories
Drop Pile Hammers and Caps
Steel Sheet Piling

CONTRACTORS MACHINERY COMPANY
2637 Southwest Blvd. Phone Valentine 4740 **Kansas City 8, Mo.**

FOR SALE

1¾ LIMA 701 CRANE-SHOVEL-DRAGLINE. SUPERIOR DIESEL. OVERHAULED. 60 FT. BM. BARGAIN.

1½ YD. LIMA 601 CRANE-SHOVEL-DRAGLINE. CATERPILLAR D-13000 ENGINE. 70 FT. BOOM. EXCELLENT SHAPE.

15 TON ORTON STEEL LOCOMOTIVE CRANE NEW 1942. 8 WHEEL. 60 FT. BM. LIKE NEW.

25 TON WILEY STEEL STIFFLEG DERRICK 60 FT. BM. 30 FT. MAST. CONDITION NEW.

MISSISSIPPI VALLEY EQUIPMENT CO.
509 Locust St. St. Louis 1, Mo.

DEPENDABLE USED MACHINES

Special.—Model 30 Bay City ½ yd. Diesel shovel, rebuilt in our shop

Angledozer on Cat 50
Bulldozer on RD7
Link Belt 2½ yd. crane
Browning 1¼ yd. crane
Bay City ¾ yd. crane
Lorain ½ yd. crane
Byers ¾ yd. dragline
Pioneer 42"x14' feeder
Day No. 5 hammermill
Osgood Model 200 backhoe
B-G Model 522 loader
35' steel pile leads
American 10" elec. sump pump
4x9 Lippman screen
1-1 with Hough loader

For rent.—15 current model Bay City cranes, shovels and backhoes.

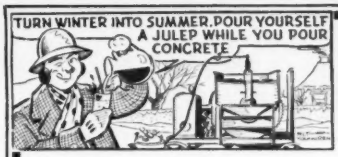
3505 W. 51st St. **TRACTOR & EQUIPMENT CO.** **Chicago, 32**

COMPRESSOR: Schramm 420 electric, capacity 450 CFM, 75 H. P. motor, V belt drive.
DRAGLINE: 4 yd. capacity, 110' boom, 2200 volt, A.C.
DRAGLINE BUCKET: Page 4 yd., medium duty, complete.
DRILLS:
1—Bucyrus Erie 29T with 9" bits and tools, gasoline powered, NEW condition. 1—Diesel powered. 1—27-T gasoline.
1—Bucyrus Erie 42T, diesel powered, with 9" bits and tools.
2—Loomis Clipper Blast Hole Drills with 6" bits and tools, gasoline powered.
BOILER: 100 H.P., 10 lbs. pressure, complete with oil burner and control equipment. Portable.
PUMP: Worthington 40 H.P. steam driven Centrifugal Pump, 300 lbs. steam pressure, 3550 RPM, with steam regulator; complete, in new condition.
GOODRICH SUPER LONG LIFE CORD CONVEYOR BELT (NEW):
1—Piece 1014 ft.
1—Piece 1017 ft.
1—Piece 268 ft.
42" wide, 6 ply, 42 oz. duck, 7/32 top cover, 1/16" bottom cover, on original reels. ALL NEW NATURAL RUBBER; with or without mechanical parts.
MOTOR: G.E. 40 H.P., 3 phase, 60 cycle, 220-440 volt, 1765 RPM, with V-belt pulleys and belts, starter, etc.
CRAWLER CRANES:
1—Northwest model 25, capacity 12 tons, 75' boom, 30" treads, Chrysler motor. Has special boom hoist for steel erecting.
1—Link Belt Speeder Crane model 75 with 50' boom and ⅝ yd. shovel equipment, gasoline powered.
1—Osgood 1¼ yd. capacity, 50' boom, gasoline powered.
1—Industrial Brownhoist Crawler Crane, built 1942, steam operated. 20 ton capacity, 50' boom, 160# code boiler.
TRAILER: Fruehauf 60 ton low bed full Trailer with dolly, model CFT-60, with 8 wheels and dolly, 16 wheels on rear oscillating axles, tires 1000 x 15, 12 ply.
GYRATORY CRUSHERS:
1—30" with manganese concaves, V-belt drive, with or without 125 H.P., 440 volt motor; capacity 250 tons per hour to 2".
1—42" complete with motor and drive.
1—Allis-Chalmers 9-K; 1—Telsmith, 16-B, all steel 15" opening.
JAW CRUSHER: All sizes 4 x 6 to 48 x 60.
REDUCTION CRUSHERS: Traylor type TZ, size 36"; Kennedy model 37 with motor integral; Symons 4 ft. Cone; Telsmith 32-B complete with V-belt pulley; Allis-Chalmers type R322 fine reduction Crusher.
ROLL CRUSHERS: Jeffrey 18 x 24 double roll crusher for coal, coke, cinders, etc. New Holland 14" x 16"; Allis-Chalmers 54 x 20, NEW condition.
PULVERIZERS:
Jeffrey 24 x 18 Swing Hammer Pulverizer, shop No. 1159.
Hardinge Conical Ball Mill 6' x 22", manganese steel lined. Herringbone gears, with motor and V-belt drive.
KILNS, COOLERS, DRYERS:
1—Single shell 34" x 20 ft. complete with drive, burner; no motor.
1—7' x 50' brick lined Kiln.
DERRICK HOIST: National 3 drum, 80 H.P., shop No. 4636, with 15 H.P. separate electric swinger, 3 phase, 60 cycle, 220-440 volt.
MINE HOISTS: Single and double drum, 150 H.P., 250 H.P., 400 H.P., 600 H.P., 800 H.P., 900 H.P. and 1000 H.P. All complete with motors and control equipment.
LOCOMOTIVES—1—Plymouth and 1—Whitcomb 30 ton, standard gauge, gasoline, air brakes.

A. J. O'NEILL
Lansdowne Theatre Building
LANSDOWNE, PA.
Phila. Phones: Madison 8300-8301

FOR SALE
1½ yd. P & H. Dragline & Backhoe, year old.
2½ yd., Koehring dragline
¾ yd., Koehring dragline
1½ yd. Bucyrus Erie dragline
2 yd., Link Belt dragline
3 yd., dragline bucket
Locomotives, gas & diesel
70 yd. Johnson 3 comp. bin with scales
½ yd. Bay City, comb. crane, shovel, dragline
"STONE THE CRANE MAN"
415 Brainard Ave. Detroit 1, Mich.

LATE MODELS
BULLDOZERS
3—Caterpillar D-8 hydraulic and cable bulldozers—2U series, 1947
3—Caterpillar D-7 hydraulic and cable bulldozers, 3T and 4T series
2—International TD-18 hydraulic bulldozer, 1948
2—International TD-14 hydraulic, wide gauge
1—International TD-9 hydraulic bulldozer
1—Caterpillar D-4 hydraulic bulldozer, with Hyster winch
All shop-repaired
Would also consider "trade-in"
BENDIX MACHINERY CO., INC.
401 Broadway New York 13
Tel: Canal 6-5693



Keep your jobs going. Buy or rent Boilers, Oil Salamanders, Concrete Heaters (torch or hot water), etc., from E. C. A.

CRAWLER CRANES, DRAGLINES AND SHOVELS
1—2¼ yd. Link Belt Model K570 Diesel Crane, Ser. No. 2215, with high gantry, hydraulic controlled. Powered by Caterpillar D17000 Diesel engine. Equipped with 80' boom. For either crane or dragline work. Will handle 2½ yd. dragline bucket.
1—1¾ yd. Link Belt Model K370, Ser. No. 2247, equipped with 70' boom, powered by Cat. D13000 Diesel engine.
1—1½ yd. P&H Model 655-A, combination shovel, dragline and crane, Ser. No. 6426, powered by Caterpillar Model D13000 Diesel engine. Crane boom 75', shovel front 24' boom, 18' sticks, 1½ yd. manganese dipper.
1—1½ yd. Link Belt Model K360, Ser. No. 1959, powered by Model 6WAKH Waukesha Hesselman Diesel engine with 65' boom. Also have back hoe attachment, boom 25', scoop arm 8'9", pull shovel mast 11'9", with 1½ yd. dipper.
2—1¼ yd. #5 Northwests, Ser. Nos. 4564 and 3427. Powered with 6 cyl. Wisc. Model D84 and Twin City Model TA gasoline engines. With 50' and 60' booms.
1—1¼ yd. Link Belt Model K38 crawler crane, Ser. No. 1520. Powered with 4 cyl. Model WL-51H by Waukesha gasoline engine with 50' boom.
1—1 yd. Byers Master Model, Ser. No. 3596, powered by 4 cyl. Hercules Model TXO gasoline engine, with 40' boom.
1—1 yd. Erie Gas-Air Model GA-2 combination shovel and crane, Ser. No. 10679, powered with 4 cyl. Waukesha Model WL25 gasoline engine, with 47' crane boom. Shovel boom 22', sticks 17' with 1 yd. dipper.
3—¾ yd Koehring Model 301, Serial Nos. 544, 772 and 840. Powered by 4 cyl. Wisconsin Model M gasoline engines. With 40' boom.
1—¾ General Model 507, Ser. No. 2575, powered by 71 HP 8 cyl. Chrysler Industrial engine, with 40' boom.
2—¾ yd. Buckeyes, Model 70, Ser. Nos. 5409 and 5411, with 40' boom, powered by 71 HP Chrysler Industrial gasoline engines.
WE OWN 15 CRANES NOT SHOWN ON THIS LIST. SEVERAL CRANES LISTED ARE IN OUR RENTAL DEPT. ONLY.

SALAMANDERS
70—NEW Danco oil burning vertical salamanders 16" square at bottom x 55" high. With outside temperature at zero, will maintain a temperature of 40 deg. F. in a 45,000 cu. ft.

DERRICKS
8—Stiffleg derricks, 1—62½ ton Insley 54' mast, 70' boom, 12-30 ton BRAND NEW Wiley derricks; 20' mast, 60' booms, 1—15 ton All Steel derrick 25' mast, 30' boom. 2—4 ton Ingrams, 23'—8" mast, 50' boom.

GUY DERRICKS AND HOISTS
2—20 ton NEW American Hoist & Derrick Co. Mdl. 2-100, steel erectors guy derricks, 122' masts, 100' booms, 16' bullwheels. Complete.
1—NEW American Hoist & Derrick Co. Mdl. 100-3G 3/drum gasoline hoist, powered by Mdl. 140-GKU Waukesha gas engine.
1—American Hoist & Derrick Co. Mdl. 140-3 steam hoist, 9" bore, 10" stroke, without boiler, equipped with air compressor for operating air frictions.

AIR COMPRESSORS
Portable and stationary, belt with electric or gas power, sizes from 20 cu. ft., 1,000 cu. ft.

PARTIAL LIST ONLY — SEND FOR NEW STOCK LIST — JUST PUBLISHED
All this equipment is owned by us and may be inspected at one of our plants.
WE BUY—REBUILD, SELL AND RENT.

Schaff Bldg., 1503 Race St.
PHILADELPHIA 2, PA.
Phone Rittenhouse 6-4664

1155 So. Washtenaw Ave.
CHICAGO 12, ILL.
Phone NE vada 8-2400

30-J Church St.
NEW YORK 7, N. Y.
Phone Worth 2-0036

P.O. Box 933-J
PITTSBURGH 30, PA.
Phone Federal 2000

EQUIPMENT CORPORATION of AMERICA

TRUCK CRANE
Slightly Used in excellent condition—"Quick-Way" Model "T" mounted on International KB6 Chassis. 20' Boom plus 10' Insert and Trench Hoe Boom with 18" bucket. Chassis driven only 150 miles.
Price $6,500.00
WRITE PHONE WIRE
EDWARD EHRBAR, Inc.
29 Meserole Avenue Brooklyn, N. Y.
Evergreen 9-5570

For Sale
120 ton Fairbanks Morse
RAILROAD TRACK SCALE
Standard Gauge—48' platform
NORDBERG TRACK SHIFTER
Model "S"
powered by 40 HP gas motor
JORDAN SPREADER CAR
Standard Gauge
IRON & STEEL PRODUCTS, INC.
13494 S. Brainard Ave., Chicago 33, Illinois
"ANYTHING containing IRON or STEEL"

FOR SALE

HOISTS
American 70 Ton Stiff-Leg 110 ft. Boom, 75 ft. Mast. New Condition.
Lidgerwood—12 x 12—Skel. Steam Hoist—3 Drum with Swinger—Air Controls. 35000# S.L.P
Wiley—30 ton Stiff-Leg—60' Boom—New.

LOCOMOTIVES
25—70 Ton, Four Pocket, all steel HOPPER CARS.
2—PLYMOUTH 8 Ton Gas Std. Ga.
VULCAN 30 Ton 0-4-0 Cat. D-17000. Mechanical Standard Ga. 4249
2 WHITCOMB 6 ton 24" Ga.

Niles O.E.T. Crane 20 Ton—3 Ton Aux—46'-6" Span—3-60-440.
Ohio—30 Ton Steam Loco. Crane #3690.
1—P & H 255-A New Trench Hoe Attachments.
49—Western 20 Yd. Air Dump Cars.
Lambert 20 Ton Steel Stiff-Leg Derrick—86' boom. Bucket operating.
Ingersoll Rand 500 Ft. Diesel Compressor.

Write R. H. BOYER, Mgr. Equip. Division
CHARLES DREIFUS CO.
12 S. 12th Phila. 7, Pa.
Write, Wire or Phone Phone Bell-Walnut 5050

OVERHEAD CRANES

2-ton P & H Span 31' 10¾". 230 Volts DC. Hoist motor 6 HP—Bridge 6 HP—Trolley 2 HP. Co'h controlled. Indoor type. Lift 16'. Pric. $3350 "as is" or $6450 rebuilt and guaranteed.

Two 2-ton Cranes. Span 15'8". 230 Volts DC. Floor operated.

2-ton Shepard. 15'8" Span. 230 Volts DC.

2-ton Shepard. 16'8" Span. 230 Volts DC.

2-ton Shepard. 23' Span. 230 Volts DC.

2½-ton P & H. Span 33'. Double trolley.

3-ton overhead crane. 20' Span. DC motors.

3-ton P & H. Span 41'6". 230 Volts DC.

3-ton P & H. 42'1½" Span. 230 Volts DC.

3-ton Shepard 16'8" Span. 230 Volts DC.

3-ton Shepard. 18' Span. Floor control. 230 Volts DC.

5-ton Crane. 20' Span. DC motors. 40' track.

5-ton American. 32' Span. Underslung type. Built in 1943.

2 Yd. Milwaukee Bucket Crane. Span 38' 10". Built in 1943.

5-ton P & H Span 41'6". 3 DC motors, 230 Volts.

5-ton Shaw. Span 16'8". 230 Volts DC.

5-ton Shaw Wall Cranes. 27' Reach. 230 Volts DC.

Two *BRAND NEW* 5-ton Shaw Cranes. Span 47'3". 440 Volts AC.

Three 5-ton Shepards. Span 16'8". Floor controlled. 230 Volts DC.

5-ton Shepard. 25' Span. 220 Volts, 3 phase, 60 cycle. Hoist motor 10 HP—Bridge 5 HP—Trolley 3 HP. Speeds: Hoist 35 FPM; Bridge 250 FPM; Trolley 15 FPM.

Five 5-ton Shepards. Span 27½'. Built in 1941.

5-ton Shepard. 30'6" Span. 31' Lift. 220 Volts, 3 phase, 60 cycle.

5-ton Shepard. 56' Span. 230 Volts DC.

5-ton Sprague. Span 16'8". 230 Volts DC.

5-ton Toledo. 37'8½" Span. 3 DC motors.

10-ton Alliance. 58'5" Span. 230 Volts DC.

10-ton Lane. 60' Span. 220 Volts, 3 phase, 60 cycle.

15-ton Alliance. 68'10½" Span. 230 Volts DC.

12½-ton Wood. 37' Span. Built in 1943.

15-ton Ederer. Span 74'4". Built in 1942.

15-ton Shepard. 17'6" Span. 230 Volts DC.

20-ton Case. 52'10" Span. 230 Volts DC.

20-ton P & H. 51'4" Span. 110 Volts DC.

25-ton Northern. Span 47'5½". 230 Volts DC.

WILEY REVOLVER CRANE—MODEL 75 Track gauge 28 ft. Lifting Capacity 32 tons. 360° working span. Boom 101 ft. 4 motors. 220/440 volts AC.

GANTRY BRIDGE CRANE 60 ton capacity. 60 ft. width. 50 ft. lift. Gauge 55 ft. 220/440 volts AC.

ECONOMY COMPANY, INC.

49 VANDERBILT AVE. NEW YORK 17, N. Y.

PAVER

1946 RANSOME-DIESEL MODEL 34E-DUAL DRUM

See It Operate

Ransome's Latest Machine
You Saw One Operating at Chicago

SAVE $12000 ON YOUR NEXT JOB

Mfg. New 1946—Serial No. 15655
36' 9" Elevating Type Power Boom
Hydraulic Controls—Dual Drum
800 Gallon Auxiliary Water Tank
Cummins HBID600 DIESEL ENGINE

PORTABLE COMPRESSORS

60 CFM Chicago (Gas) 7 Pneu.
105 CFM Worthington (Gas & Diesel) 4 Pneu.
105 CFM Ingersoll (Gas) with Ford Truck.
210 CFM Worthington (Gas & Diesel) 4 Pneu.
315 CFM Chicago (Cat Diesel) Like New.
315 CFM Worthington (Gas & Diesel) 4 Pneu.
500 CFM Worthington (Cat Diesel) Like New.

SHOVEL-CRANE

New "Quick-Way" Model "J" with Trench-Hoe & Crane attachment. Bargain for Quick Sale.

AMERICAN AIR COMPRESSOR CORP.
Dell Ave. & 48th St.
North Bergen, N. J.

AUCTION SALE
Repossessed & Surplus Construction Equipment

NORTHWEST
Model 5, 1¼ yd. Diesel Comb. Shovel-Dragline W/Buckets

RANSOME
34E Dual Drum Paver

WORTHINGTON
315 ft. Diesel Comb. on Rubber
Road Rollers—Tractors
Truck Mixers on Trucks, Etc.

McCLUNG-LOGAN EQUIP. CO.
Port Covington; Baltimore, Md.
Time 11:00 AM, Sat. Feb. 19th
Place, Our Yard - Port Covington

FOR SALE
FACTORY NEW BARNES CENTRIFUGAL PUMPS
Sizes 1½" to 6"
and
BARNES SINGLE DIAPHRAGM PUMPS
Immediate Delivery
20% OFF LIST
also
New and Slightly Used Buggymobiles

HODGE & HAMMOND, INC.
1162 Grinnell Place
New York, 59, N. Y.
Dayton 9-5300

STEEL

For All Purposes
Immediate Delivery
Warehouse and Fabricating Facilities
Write—Wire—Phone

LONG ISLAND BEAM CO.
39-21 21st St. Long Island City 1, N. Y.
Stillwell 6-5900-1-2-3

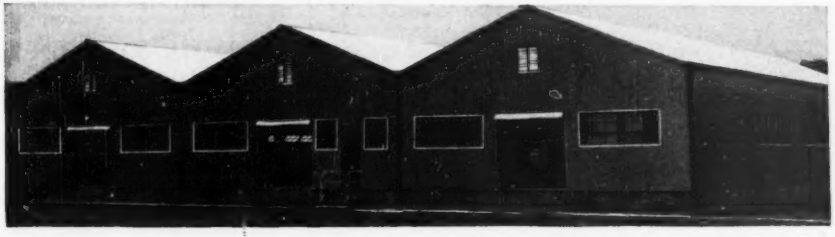
SNOW LOADER

Barber-Greene Model 538
Crawler Mounted
Gasoline Power
Capacity 10-20 yards per min.
$1,500
Good Condition · Quick Delivery

EDWARD EHRBAR, INC.
29 Meserole Ave. Brooklyn 22, N. Y.
Evergreen 9-5570

ECONOMY STEEL BUILDINGS

(Registration applied for)



NEW and USED STEEL BUILDINGS

Spot Delivery

Write for complete data on Sizes and Specifications—We have a wide variety of selections

These buildings have the following attractive features:

1. Ease and simplicity of erection.
2. Optional use of multiple bays to increase length or width.
3. Variable eave heights up to 30 ft.
4. Clear spans without supporting columns, up to 70' wide.
5. Unobstructed interior clearances.
6. Large door openings ranging in size from 10' x 10' to 20' x 20' with a choice of location and arrangement.
7. Adaptability to any type of business or industrial use.
8. Crane runways can be furnished for any bay in any building.

ECONOMY COMPANY, INC.

49 VANDERBILT AVE. ***Murray Hill 4-1616*** **NEW YORK 17, N. Y.**

FOR SALE

Narrow Gauge Equipment

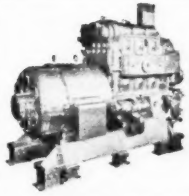
36" Gauge

1—20 ton Davenport Locomotive steam-operated, 165# W. P. A.S.M.E. boiler
3—12 ton Whitcomb Locomotives, gas
46—4 yd. Koppel Quarry Cars
14—5 yd. Koppel Dump Cars

24" Gauge

1—4 ton Plymouth Locomotive, gas
1—5 ton Whitcomb Locomotive, gas, Type 3-SP
30—1 cu. yd. all steel Koppel Cars

IRON & STEEL PRODUCTS, INC.
Founded 1930
13494 S. Brainard Ave., Chicago 33, Ill.
"ANYTHING containing IRON or STEEL"



DIESEL GENERATOR PLANTS

FOR IMMEDIATE DELIVERY

HEMCO

1000 KW, 2400 Volts, 3 Phase, 60 Cycle, 720 RPM, General Motors Model 16-278A
750 KW, 2400 Volts, 3 Phase, 60 Cycle, 720 RPM, General Motors Model 12-567
600 KW, 2400 Volts, 3 Phase, 50 Cycle, 600 RPM, General Motors Model 12-567
300 KW, 450/2400 Volts, 3 Phase, 60 Cycle, 1200 RPM, General Motors Model 8-268A
200 KW, 450/2400 Volts, 3 Phase, 60 Cycle, 1200 RPM, General Motors Model 8-268A
50 KW, 440 Volts, 3 Phase, 60 Cycle, 900 RPM, Fairbanks-Morse Model 36A 5½
100 KW, 3 Wire, 125/250 Volts, DC, 1200 RPM, General Motors Model 3-268A
900 HP, General Motors Model 12-567, Propulsion Unit Complete

HERCULES ELECTRIC MACHINERY and EQUIPMENT CO.

Telephone NEvada 6-2808
Cable Address HEMCOY
1412-18 So. Alameda Street
Compton, Calif.

FOR SALE

1—Lorain TL-20 Gas Crawler Backhoe, 30" Bucket, new Aug. 1948.
1—Link-Belt 40-ton cap. K-55 Gas Crawler Crane, 90' bm., rebuilt.
1—Northwest Model-25 Gas Crawler basic machine without front end.
1—Lorain MC-414 Moto-Crane 1948.

GREY STEEL PRODUCTS CO.
74 Central Ave., Glen Rock, N. J.
Tel. Ridgewood 6-2275

FOR SALE

100 Tons 6" H 20# 40'
100 Tons 8" H 31# 40'
100 Tons 10" H 49# 40'
250 Tons 12" H 65# 40/45'
25 Tons 33" WF 200# 60'
25 Tons 27" WF 145# 60'

Large Stock of Angles, Channels and Standards I-Beams.

QUEENSBORO STEEL CORPORATION
STillwell 4-2720-2705 L. I. City, N. Y.

FOR SALE

1—Northwest Model 80D—2½ cu. yd. crawler shovel, crane/drag combination, Murphy diesel engine.
1—Bucyrus Erie 38B—1½ cu. yd. crawler shovel, General Motors diesel engine.
2—Lorain 1¾ cu. yd. diesel shovels.
1—Northwest Model 25 crawler pull-shovel, gasoline engine.
1—Northwest Model 25 crawler crane, gasoline engine.

HODGE & HAMMOND, INC.
1162 Grinnell Place, New York, 59, N. Y.
Dayton 9-5300

CHECK THIS LIST OF VALUES!

6 Super C Tournapulls Cummings Diesel Engines. Less Than 6 Months Old.

Rex 34E Dual Drum Paver.

Rex Pumpcrete, Model 160 Double. Completely Overhauled and Repaired. Approx. 1,000 Lin. Ft. of 7" Pipe.

LeTourneau Model FP Carryall Scraper, 18.00 x 24 Tires.

Smith Hi-Discharge Truck Mixer, 3 Cu. Yd. Size.

1 Rex Truck Mixer, 2½ cubic yard capacity.

1 Rex 3 Yd. Horizontal Truck Mixer.

3 Rome Graders, Model 404, powered with Diesel engine.

1 Galion Chief 3-Wheel Roller, Powered with Waukesha engine.

2 LeTourneau Rooters, Model S3.

2 LeTourneau Rooters, Model K-30.

Buda Earth Drill, Hydraulic, Model HBJ.

8 Herman Nelson Portable Heaters, Reconditioned, Model GT3050.

1 Universal Crushing & Screening Plant, Model 293Q. Complete with Primary Jaw Crusher, Twin Roll Secondary, All Mounted on Pneu. Tires.

Worthington 315 Compressor, UD18 Diesel Engine, 4 Pneu. Tired Wheels.

Worthington 210 Compressor, Gasoline Engine, 4 Steel Wheels.

LeRoi 315 Compressor, Cat. Diesel Engine, 4 Pneu. Tired Wheels.

Worthington Wagon Drill.

Ingersoll-Rand Compressor, Model GK210, on 4 Pneu. Tires.

Ingersoll-Rand Compressor, Model GK105, on 4 Pneu. Tires.

Ingersoll-Rand Compressor, Model 315A, on 4 Pneu. Tires.

2 Ingersoll-Rand Wagon Drills, Model FM2, with X71 Drifters, Pneu. Tires.

SUBJECT TO PRIOR SALE

COMPLETE STOCK OF INGERSOLL-RAND AND TIMKEN DRILL-STEELS, JACKBITS, MOIL POINTS, ETC.

WRITE . . . . PHONE . . . . WIRE . . . . VISIT

FURNIVAL MACHINERY CO.

"DEPENDABLE EQUIPMENT APPLIED AND SERVICED"

54th at Lancaster Ave., Philadelphia 31, Pa. TRinity 7-5200

SALES . . . SERVICE . . . RENTAL . . . PARTS

SAVE over 60%

BRAND NEW - SUPERIOR ALL-PURPOSE

WELDING TORCH

COMPLETE WITH TIPS, HANDLE, MIXER, HOSE FITTINGS AND WRENCH

MADE BY

"REGO"

Regular List Price $38.25

YOURS FOR ONLY

$12.95

2 FOR $25.00

Designed to meet the requirements of Industrial Plants, Welding Shops, Shipyards, Mines and Railroads. Each torch is Brand New and Guaranteed Perfect or your money refunded.

NATIONAL #400 CUTTING TORCH

COMPLETE WITH 4 TIPS & WRENCH IN ORIGINAL CARTON

REG. LISTS FOR $43.00

OUR PRICE

$15.75

2 FOR $30.00

WILL SHIP RATED FIRMS. OPEN ACCOUNT FOB PHILA. OTHERS PLEASE SEND CHECK

J. JACOB SHANNON & CO.

214 N. 22nd St. Phila. 3, Pa.

THE OLDEST EQUIP. HOUSE IN PHILA.

FOR SALE or RENT ALL LATE MODELS

1—N. W. Shovel, 2½ c.y., new Oct. 1946

1—N. W. Shovel, 1½ c.y., new April 1946

1—P & H Dragline, 1½ c.y., new June 1948

1—N. W. Shovel, ¾ c.y. Diesel, Backhoe —40' Crane, Dragline, new Aug. 1948

1—Allis Chalmers Tractor Model HD19H, new May 1948

5—D W 10's—used 2500 hours

1—Caterpillar Auto Patrol #12—9K4626

1—Caterpillar D8 Angledozer #8R8933

1—Caterpillar D7 Bulldozer 4T5988

WILLIAMS CONSTRUCTION CO.

Box 145, Middle River, Baltimore 20, Md.

Phone: Essex 1310

For Sale—Like New

NORTHWEST MODEL 25

with D4600 engine

COMBINATION SHOVEL-BACKHOE

$14,700 f.o.b. L. A.

M. P. McCAFFREY CO., INC.

2121 East 25th St., Los Angeles 11, Calif.

SELF PRIMING CENTRIFUGAL PUMPS

Gasoline Engine Driven

Jaeger and Rex

8" 10"

Thoroughly reconditioned

EDWARD EHRBAR, INC.

29 Meserole Ave. Brooklyn 22, New York

Evergreen 9-5570

NEW and REBUILT

STORAGE BATTERY

LOCOMOTIVES

1½ to 10 Ton — 18" to 36" Track Gauge

GREENSBURG MACHINE CO.

Greensburg, Penna.

SACRIFICE

New Bulldozer Blade complete with all attachments for Caterpillar Model D-7 Tractor. $500.

Factory new Caterpillar D-8 Tractor equipped with DDPCU and Angle Blade.

3 late model D-7 Caterpillar Tractors, $9000 to $11,500.

This equipment all located on our property at Danbury

Tel. Danbury, Conn. 2344 or write

DANBURY MOTOR EXCH.

Danbury Airport Danbury, Conn.

FOR SALE

4—Super C TOURNAPULLS

in good running condition. Bought late in 1945. Serial # C3T-4877 CIH—# C3T-4891 CIH—# C3T-4888 CIH—# C3T-4937 CIH

Price $7500.00 each

2—DW 10 DIRT WAGONS

equipped at present with 3,500 gallon water tank.

Serial # C2184—Serial # C2185

Price $3500.00 each.

CALUMET PAVING CO.

102-110 S. Noble St. Indianapolis, Ind.

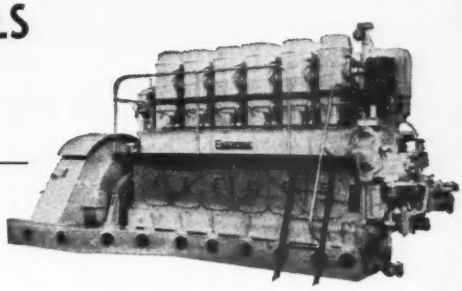
P. O. Box 1217

NEW ENTERPRISE DIESELS

WITH 300 KW IDEAL A.C. GENERATORS

FOR

IMMEDIATE DELIVERY



OTHER DIESELS AVAILABLE
UNIT CAPACITIES—10 TO 1420 KVA
A.C.—50 AND 60 CYCLES

A PARTIAL LIST OF OUR INVENTORY

KVA	Make	Model	HP	RPM	KVA	Make	Model	HP	RPM
1420	Fairbanks Morse	38D8¼	1600	720	312	General Motors	8-268A	450	1200
1250	General Motors	16-278A	1600	720	300	Fairbanks Morse	YVA	360	257
900	General Motors	12-567	1080	720	200	Buckeye	80	240	600
625	Superior	OS	750	327	125	General Motors	3-268A	150	1200
425	Baldwin	VO-6	510	450	75	General Motors	6016-E	90	1200
375	Enterprise	DSG-6	450	450	62	Int'l Harvester	UD-18	76	1200

WRITE FOR COMPLETE INFORMATION

Engineered AGSCO DIESEL POWER

A. G. SCHOONMAKER Company, Inc.

ESTABLISHED 1898

Diesel Engines • Power Machinery

DIESEL DIVISION, 50 CHURCH STREET, NEW YORK 7, N. Y.

FOR SALE

Koehring ¾ Yd. Model 303 CRAWLER-SHOVEL

Serial #2075

Powered by Caterpillar Diesel Engine

Good working condition

D. C. ELPHINSTONE, INC.

115 S. Calvert Street Baltimore 2, Maryland

FOR SALE—BUCKETS

Distributors for Pettibone Mulliken Corp.

Clamshell - Dragline - Dipper and Pull Shovel Buckets

1—45 ft Span Overhead Crane 20 Ton
1—Lorain 40 Combination Shovel & Dragline Gas
1—Lorain 77 Combination Shovel & Crane Gas
1—Lorain 40 Truck Crane

FOLLOWING—Rebuilt and Guaranteed

1—Haiss Wheel Loader Model 77W
1—Bay City 20 Ton Truck Crane

VAN HOUTEN MACHINERY CO.
908 Van Houten Ave. Clifton, N. J.

SHOVELS — DRAGLINES

Model 1400 P&H 4 yard electric shovel. 32' boom, 21' stick, Magnatorque hoist. New February, 1948. Machine like new. Bargain.

Model 1500 P&H electric dragline with 135' boom, 4 yd. bucket. Machine in excellent condition.

Model 900 P&H dragline. 100' aluminum boom, 3½ yd. bucket, Fairbanks-Morse diesel engine. Machine about 10 years old, but in very fine mechanical condition. Bargain price.

37-B Bucyrus-Erie 1½ yd. diesel shovel. D13000 Caterpillar engine. Machine rebuilt. Bargain.

Model 625 Page diesel dragline. 140' boom, 9 yd. bucket.

Model 595 Link-Belt dragline. 85' boom, 2½ yd. bucket, D17000 Caterpillar diesel engine. Very good condition.

Parmanco vertical auger drill. Mounted on Dodge Power Wagon. New.

D-7 Caterpillar and **TD-9 International** tractors.

FRANK SWABB EQUIPMENT CO.

Hazleton National Bank Bldg., Hazleton, Penna.

Telephone 4910

2—Browning T-15 truck cranes 25' booms
2—Browning 25-ton steam rail cranes, 50' booms, overhauled
Location vicinity of New York.

HOISTING MACHINERY CO.
50 Church Street New York 7, N. Y.

FOR SALE

11x10 Sullivan Belted Compressor, 50 H.P. Motor.
50 & 20 H.P. D.D. Novo Gasoline Hoists.
50 H.P. D.D. Electric Hoist.
Boiler for Crane: 150 Lb. Steam Pressure.
2 & 3 Drum Steel Hoists.

PITTSBURGH MACHINERY & EQUIPMENT CO.
Aspinwall 15, Pa.

⅜ yd. Byers Bearcat Jr. crane
1¼ yd. No. West comb. pullshovel-crane
50 ton Baldwin loco. oil fired, ST.
160# Vt. boiler 54" x 8' 5" Nat. Bd.
25 ton Browning loco. crane 50' boom

J. T. WALSH
508 Brisbane Bldg. Buffalo 3, New York

for IMMEDIATE DELIVERY *of* RUBBER PRODUCTS

CONVEYOR BELTING, TRANSMISSION BELTING, ELEVATOR BELTING, FIRE, WATER, AIR, STEAM, SUCTION and WELDING HOSE.

CALL WIRE WRITE CARLYLE

THE RUBBER HEADQUARTERS

CARLYLE RUBBER PRODUCTS ARE NEW, GUARANTEED & LOW PRICED

NEW GUARANTEED

CONVEYOR BELTING

ABRASIVE RESISTANT COVERS

Width	Ply	Top-Bottom Covers	Width	Ply	Top-Bottom Covers
48"	8	1/8" — 1/16"	24"	4	1/8" — 1/32"
42"	5	1/8" — 1/16"	20"	5	1/8" — 1/32"
36"	6	1/8" — 1/16"	20"	4	1/8" — 1/32"
30"	6	1/8" — 1/16"	18"	4	1/8" — 1/32"
30"	5	1/8" — 1/16"	16"	4	1/8" — 1/32"
26"	5	1/8" — 1/32"	14"	4	1/16" — 1/32"
24"	5	1/8" — 1/32"	12"	4	1/16" — 1/32"

Inquire For Prices — Mention Size and Lengths

TRANSMISSION BELTING

HEAVY-DUTY FRICTION SURFACE

Width	Ply	Width	Ply	Width	Ply
18"	6	10"	6	6"	5
16"	6	10"	5	5"	5
14"	6	8"	6	4"	5
12"	6	8"	5	4"	4
12"	5	6"	6	3"	4

Inquire For Prices — Mention Size and Lengths.

ENDLESS "V" BELTS

"A" Width All Sizes —
"B" Width All Sizes —
"C" Width All Sizes —
"D" Width All Sizes —
"E" Width All Sizes —

Sold in Matched Sets.
Inquire For Prices — Mention Size and Lengths.

SPECIAL OFFER . . . HEAVY DUTY RUBBER HOSE

FIRE HOSE

APPROVED SPECIFICATION HOSE EACH LENGTH WITH COUPLINGS ATTACHED

I.D. Size	Length	Per Length
2½"	50 feet	$28.00
2"	25 "	16.00
	50 "	23.00
1½"	25 "	13.00
	50 "	20.00
	25 "	11.00

Specify Thread On Couplings

AIR HOSE

I.D. Size	Length	per Length	Universal Couplings
½"	25 feet	$5.00	$1.50 Pair
	50 "	10.00	1.50 Pair
¾"	25 "	7.50	1.50 Pair
	50 "	15.00	1.50 Pair
1"	25 "	10.00	1.50 Pair
	50 "	20.00	1.50 Pair

LARGER SIZES ALSO AVAILABLE
All Prices—Net — F.O.B. New York

WATER HOSE

I.D. Size	Length	per Length	I.D. Size	Length	per Length
⅜"	25 feet	$4.25		35 feet	$10.50
	50 "	8.00		40 "	12.00
1"	25 "	6.25		50 "	15.00
	50 "	12.50	1½"	25 "	10.00
1¼"	25 "	7.50		35 "	14.00
				50 "	20.00

Each Length with Couplings Attached

CARLYLE RUBBER CO., Inc.

62-66 PARK PLACE, NEW YORK 7, N. Y. Phone: BArclay 7-9793

STEEL FORMS FOR SALE

8,000 sq. ft. Practically new Atlas Speed Forms *Sizes*

6"x7' 11½"—8"x5' 11½"
8"x7' 11½"—6"x5' 11½"

Suitable for Foundation Wall or Pier Construction

SANDERSON & PORTER
Box 243 Front Royal, Va. Phone 705

FOR SALE

STEEL RAILROAD BRIDGE

Being dismantled and marked for re-erection at this time. Steel in excellent condition, can very readily be converted into a highway bridge. We can furnish plans, also plans for sub-structure. Bridge is 1516' long, carried on steel bents, that vary in height from 30' to 290'. Deck of bridge is made up of three lines of girders, deck trusses and cantilever spans on 5' centers. 35 and 45' girder spans, 8—65' deck truss spans, 2—85' pin connected cantilever spans, 2—52' pin connected cantilever spans, 80' suspended truss which gives 185' clear opening. For further information contact

ROBINSON ERECTION CO.
5540 West Park Avenue, St. Louis 10, Mo.

FOR SALE—NEW

1—Koehring Model 34E-1A Paver complete with full length crawler traction, charging skip, 60 gallon water measuring tank, 140 gallon reserve tank power boom swing, batchmeter, and 35' boom and 60 cu. ft. double door distributing bucket with 32' 6" distributing radius, pneumatic discharge, equipped with Hercules HXC gas engine 600 gallon reserve water tank with 3" Gorman-Rupp Pump. Price $21,700.00

F.O.B., Hasbrouck Heights, N. J.

F.S. 7745 Engineering News Record
330 W. 42nd St., New York 18, N. Y.

FOR SALE

DREDGES and FLOATING EQUIPMENT

H. P. GUION
303 W. 42nd St. New York, N. Y.

FOR SALE

EUCLID BOTTOM DUMP

1942, 18 cyd Struck Capacity, Tractor Model 3LDT, Trailer Model 63-W, powered 6 cyl Cummins Supercharged Diesel, Tractor Drive & Trailer Tires 24:00 x32, 36 ply. $8,500.00.

EQUIPMENT RENTAL SERVICE
213 E. St. Joseph St. Lansing 15, Michigan

SURPLUS TO OUR NEEDS

Make	Model	Boom	Capacity	Power
Marion	392	100 ft.	2½ yd.-50 ton	Diesel
P & H	700	65 ft.	1½ yd.-20 ton	Diesel
Link Belt	K	50 ft.	1¾ yd.-15 ton	Gasoline
Link Belt	TC 90 (Truck Crane)	60 ft.	1¼ yd.-20 ton	Gasoline
Ohio	Locomotive Crane	50 ft.	30 ton	Oil Fired Steam

VULCAN SWITCHING ENGINE
30 ton 0-4-0 Standard Gauge Diesel 17000 Caterpillar

NEWTOWN IRON & STEEL CORP.
26 Court St. *TRiangle 5-4696* Brooklyn 2, N. Y.

FOR SALE

NORTHWEST SHOVELS

MODELS 80D, 6 & 25
LATE MODELS IN EXCELLENT CONDITION

WILLIAMS CONSTRUCTION COMPANY
Box 145, Middle River, Baltimore 20, Md.

FOR SALE—IMMEDIATELY AVAILABLE

1—Koehring 28S electric driven concrete mixer with batch hopper, water tank, and batchmeter
2—Rex 200D electric driven Pumpcretes—one with pugmill remixer—one with rotary remixer—and spare parts
900 ft.—6" pipe and fittings for Pumpcrete
1—60 cu. yd. Muck Hopper with Union Iron Works air operated gate

MAHONEY-CLARKE, INC.
217 Pearl St., N. Y. C. WH 3-0760

Contractors - Plant Owners

A COMPLETE LINE OF CONSTRUCTION TOOLS AND EQUIPMENT FOR INDUSTRIAL OR PROCESS PLANT CONSTRUCTION AND MAINTENANCE

Derricks, cranes, hoists, rigging specialties; winch trucks, pickups, jeeps; welding machines, acetylene torches; air compressors; pneumatic hammers, chippers and drills; electric saws, drills, drill presses, and grinders; pipe threading machines and tools; wheelbarrows, concrete carts, concrete buckets, vibrators, pumps, rod benders, shears, etc.—for BARE BASIS RENTAL.

Rentals by the Piece or Project

Charges are for rental only, plus our direct costs of handling, shipping, maintenance and reconditioning. Rental by written contract, with minimum rental period, on a monthly basis. Credit reference will be needed at the time of inquiry.

Advise Your Requirements and Schedules

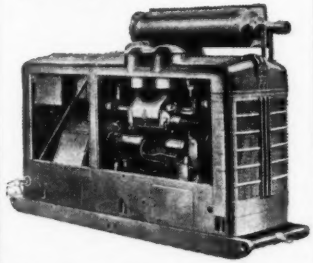
CONSTRUCTION TOOL & EQUIPMENT DIVISION, ROOM 1224-A

THE LUMMUS COMPANY, 420 Lexington Avenue, New York 17, N. Y.

Telephone: MURRAY HILL 9-2525 Ext. 255

INSPECTION BY APPOINTMENT AT WAREHOUSES IN HOUSTON, TEXAS

NEW
60 KW GMC
DIESEL SETS
For
IMMEDIATE DELIVERY



These fully-portable, self-contained units are offered at considerably less than manufacturer's list prices.

WRITE OR WIRE TODAY FOR COMPLETE INFORMATION

OTHER NEW UNITS AVAILABLE FROM 10 KW TO 50 KW

A. G. SCHOONMAKER CO. Inc.
DIESEL DIVISION
50 CHURCH ST. N. Y. 7, N. Y.

---

150 CRANES

½ and ¾ YARD

TRUCK—CRAWLER and CRUISERS

LORAINS — INSLEY — LIMA — KOEHRING
P & H — BUCYRUS-ERIE-UNIT — BYERS
BAY CITY — NORTHWEST — OSGOODS
LINK BELT SPEEDERS — MARIONS

AS IS OR RECONDITIONED AT VERY LOW PRICES

ELLIS-NOVACK CO.
1925 Buena Vista **Burbank, Calif.**
Phone **Charleston 8-1641**

PILE HAMMERS

McKiernan Terry #6-7-10B3
Thoroughly Reconditioned
EDWARD EHRBAR, INC.
29 Meserole Ave., Brooklyn 22, New York
Evergreen 9-5570

FOR SALE OR RENT

Marion 362 Diesel 1½ cy Shovel & Crane
LORAIN 77 1½ cy Shovel & Crane
Lorain 78 Diesel 1½ cy Shovel & Crane
Northwest 25 Diesel ¾ cy Backhoe & Crane
Lima 34 Paymaster ¾ cy Shovel, Backhoe
Lorain 30—½ cy Shovel, Backhoe & Crane
Lorain Mc4 MOTO Crane 40' boom
Insley ½ cy K-12 Truck Crane, 28' boom

BENDIX MACHINERY CO., INC.
401 Broadway, New York 13 Tel: Canal 6-5693

FOR SALE

1—Rebuilt, like new, model 301 Koehring crane #3864, 50 ft. boom.
1—1945 Barber Greene Model 82-A, bucket loader, long crawlers, creeping gear.
1—Rebuilt Model 45 Bay City crane shovel and dragline, late model, gas.
1—10-B-3 and 1—9-B-3 McKiernan Terry steam pile hammers.
1—70 H.P. and 1—50 H.P. 125 lbs. pressure, steam vertical boilers.
1—New 50 ft. Lorain, 75 B. or 57 Crane boom, 1¼ yd. capacity.
1—New 160 ft. Davey portable compressor, gas.

FOR RENT

1—New 20 Ton capacity Bay City Truck Crane, 85 ft. boom.
1—18 ton capacity Manitowoc Crawler crane, 90 ft. boom.

MERTES MACHINERY COMPANY,
1622—S. 1st St., Milwaukee 4, Wisconsin
Phone — Mitchell 5-8820

SEARCHLIGHT SECTION

FOR SALE

Immediate Delivery

From Our Own Warehouse

used

WIDE FLANGE BEAMS

perfect material

50 pcs.	12"	WF	28.5#	19'10"
50 "	12"	WF	36	19'10
280 "	24"	WF	76	23'0
260 "	24"	WF	76	24'9
200 "	24"	WF	84	28'2
58 "	24"	WF	100	60'0
22 "	30"	WF	116	37'6
85 "	36"	WF	230	60/80'

We cater particularly to engineer's and contractor's structural steel needs. We carry a complete line of new structural steel. We suggest that you contact us immediately for any material you may need.

HY DRACHMAN STEEL CORP.

Warehouse

14-23 34th Avenue Astoria, L. I.

AStoria 8-8023 - 8096

Main Office

563 E. Tremont Ave. New York 57, N. Y.

CYpress 9-5440 - 1

IN STOCK FOR IMMEDIATE DELIVERY

NEW PLAIN HOT ROLLED MILD STEEL SHEETS AND PLATES

IN STOCK IN NEW YORK

Approx 150 tons—12 USG Size 36"x96"

IN STOCK IN NEW YORK AND BALTIMORE

Approx 220 tons 3/16" Size 60"x180" and 60"x240"

FOR FEBRUARY SHIPMENT TO NORTH ATLANTIC OR GULF PORTS

Approx 125 tons 10 USG Size 60"x120" or 60"x144"

Approx 125 tons 1/8" (11 USG) Size 60"x120" or 60"x144"

FABRIKANT STEEL PRODUCTS, INC.
50th Floor—Woolworth Bldg.
New York 7, N. Y. BEekman 3-3041
CABLE ADDRESS: FABKANT, New York
MEMBER: Association of Steel Distributors

TRENCHING MACHINE

Cleveland Baby Digger, Model 85, with trailer on Pneumatic tires. Serial #2385. Inquire

C. F. GILGENBACH
R. D. #1, Elyria, Ohio
Phone, Elyria 4-6148

FOR SALE AT A RIGHT PRICE:

1—Sterling Diesel Tandem Tractor with a new H.B. 600 Cummings Motor. Tractor completely rebuilt two months ago by Sterling Motors.

1—90 Ton Rogers "I" Beam Trailer.

1—Rogers Low-boy with 80 Ton Drop Deck. 750x18 Tires.

WANTED:

1—Model 32 Hanson Shovel Front.

Write **T. J. KILMAIN SALES CO.**
NORTH MT. VERNON AVE. UNIONTOWN, PENNA.
or call Uniontown 5400

---

700 TONS ALL NEW Tractor, Grader & Scraper Parts

Cutting edges of all descriptions
Full line of track frame assembly

Rollers—Idlers—
Sprockets—Chains, etc.

Also Fair Leads—
Miscellaneous Parts

JULIUS HEBENSTREIT, INC.
56-15 58th St. Maspeth, L. I.
Tel. DAvenport 6-7461
Cable: Habenjul New York

FOR SALE

1—TD9 International Tractor w/Bucyrus Bull Grader

1—T6 International Tractor w/Bucyrus Bulldozer

1—Barber-Green Ditcher 44C

1—Insley Shovel/Backhoe Combination

1—10 Yard Woolridge Scraper

1—3 wheel 7 ton roller

FERGUSON CONSTRUCTION CO.
137 Boulevard, NE
Atlanta, Georgia

FOR SALE

LINK BELT CRANE

1½ yd. (diesel)

80' boom clamshell digging bucket and fairleads. Wide cats. Completely overhauled.

HEDCAR EXCAVATING CO.
15 William St., Suite 1514, N. Y. 5, N. Y.
Hanover 2-9194

FOR SALE OR RENT

Loraine 40A 3 way combination machine.
Insley truck crane HE14 bulldozer.
10 yd. tournapull.

Guaranteed inspection on heavy equipment.

D. T. KISSINGER
530 Truxton Street, Bronx, N. Y.
Phones: Dayton 8-0751 Eve: Jerome 8-0554

FOR SALE OR RENT

Link Belt Truck Crane

New 1947. T 90—Sectional Boom up to 122 ft—Back Hoe with High Gantry and Extra Counter Weight—Clam Shell and 3,000 LB. Vulcan Drop Hammer with Leads. Used about six months.

FR-7325, Engineering News-Record
330 West 42nd Street, New York 18, N. Y.

FOR SALE

1—Lima Paymaster
1—Lorain L-41
1—1½ cy Osgood, Air controls
1—Lorain 88 with 1½ cy front end
2—1¾ C.Y. Lima, air controls
1—International 1-6 bulldozer
3—D-7 Tractors
1—Austin Western 99M Grader
1—Austin Western Elevating Grader
1—H.D. 19 AC Tractor-bulldozer

FOR RENT

1—1¾ cy Osgood, Air controls
1—Lorain Moto Truck Crane
1—D-8 tractor-Bulldozer
1—500 Compressor
2—Wagon Drills
1—Dust Collector
4—Read dump Euclid Trucks
Complete paving and Road equipment.

TUCKAHOE CONSTRUCTION CO., INC.
116 Columbus Ave. Tuckahoe 7, N. Y.

FOR SALE

NORTHWEST MODEL 25

Serial #5516—6 Cyl. Wisconsin Gas Engine—Wide Cats—45 Ft. Boom—Fairleads—¾ Yd. R.H. Page Drag Bucket—Excellent Condition—Will stand the most rigid inspection. Priced reasonable.

GENERAL CONSTRUCTION CO.
1221 E. Fifth Ave. Columbus 3, Ohio

FOR SALE

Four, 30 ton Salvage Pontoons

canvas, U. S. Surplus, in original cases, never used. $200 each. Original cost $900 each.

REX MARINE BASIN
South Norwalk Connecticut

FOR SALE

Shovels, Dozers, Graders, Rollers, Pavers, Trenchers, Compressors, Pumps, Chippers, Jack Hammers, Pavement Breakers. Other Construction and Excavating equipment all in first class condition.

Details and Prices upon request.

E. B. McGURK, INC.
Box 630, Hartford 1, Hartford, Conn.
S. F. Mitchell, Purchasing Agent

FOR SALE

All or any part—1 Sauerman Dragline outfit, one yard bucket, including 2-drum Jaegar Hoist powered by International TD18 Diesel Engine in practically new condition, 4000 feet cable.

TROY SLAG PRODUCTS COMPANY, INC.
Foot of Monroe Street TROY, N. Y.

FOR SALE

150,000 GALLON USED TOWER TANK

150 ft. high to balcony—good condition—will quote installed on purchaser's foundation—address

F. J. UEHLEIN
P. O. Box 374 Hicksville, New York

FOR RENT

20-10 TON TO 25 TON CAPACITY

TRUCK CRANES

SECTIONAL BOOM LENGTHS TO 130 FEET

LIMA & P & H CRAWLER CRANES

30 TON TO 50 TON CAPACITY

SECTIONAL BOOM LENGTHS TO 175 FEET

THE ROGER SHERMAN TRANSFER CO.
EAST HARTFORD, CONN.

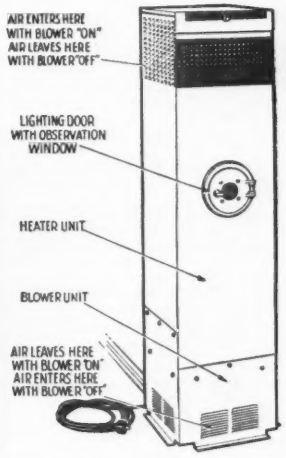
Branches: SPRINGFIELD, MASS. NEW HAVEN, CONN. ALBANY, N. Y.

HEATER SALE

BRAND *NEW* GOV'T SURPLUS

25,000 B.T.U. OUTPUT

"Evans" All-purpose, fully-automatic Heater is 4-ft. high and 1-ft. square. Electrically-operated on 110-volt AC. Unit has all equipment for easy assembly —ready for safe, silent, economical use.


AIR ENTERS HERE WITH BLOWER "ON" AIR LEAVES HERE WITH BLOWER "OFF"
LIGHTING DOOR WITH OBSERVATION WINDOW
HEATER UNIT
BLOWER UNIT
AIR LEAVES HERE WITH BLOWER "ON" AIR ENTERS HERE WITH BLOWER "OFF"

BURNS FUEL OIL AUTOMATICALLY; REGULAR PRICE IS OVER $200

Ideal to heat shops, sheds, garages, warehouses, offices, cabins. Use top for cooking.

COMPLETE WITH ELECTRIC MOTOR

Blower fan, stack, 10-ft. cord, plug; 10-gal. fuel tank. Immediate Delivery.

$77
FREIGHT PREPAID
Anywhere In U. S. A.

Phone COLLECT - your order will be shipped TODAY

BERNSTEIN BROTHERS
SINCE 1890 – PHONE 8404
PUEBLO, COLORADO

For Rent

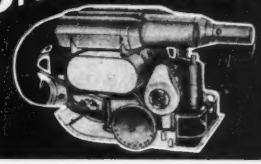
SPEEDCRANES

LATE MODELS

Manitowoc Diesel Powered Speedcranes for rent. 25, 40 and 50 ton capacities with booms 100' or more, 20' and 30' jibs. Special price on long rentals.

FORSYTHE EQUIPMENT CO., INC.
11 West 42nd St. New York 18, N. Y.
Tel. PEnnsylvania 6-7554

PORTABLE HEATERS SALE IMMEDIATE DELIVERY



Stewart-Warner Portable Powerful 100,000 BTU Gasoline-Burning Heaters complete with Turbine Type Blower and 1½ HP. Air-Cooled Ball-Bearing Engine.

PORTABLE SELF-POWERED MANY PURPOSE HEATER

HEATING buildings, shops, sheds, warehouses, manholes, tunnels, buildings under construction, spot-heating, etc.
PREHEATING engines, tractors, trucks, equipment, etc.
THAWING frozen areas, machinery, pipe lines, tanks, etc.
DRYING plaster, paint, mortar, concrete, etc.

ORIGINAL COST $583.00

SALE PRICE....$195.00

Complete with flexible ducts.

Send for literature

Phone COLLECT - your order will be shipped TODAY

BERNSTEIN BROTHERS
SINCE 1890 – PHONE 8404
PUEBLO, COLORADO

ATTACHMENTS

Northwest model 25 Shovel Front
Lorain 40 Crane Boom 40' long
Owens ⅝ cy general purpose Clamshell Bucket
Owens 1 cy general purpose Clamshell Bucket
Hendrix 1 cy Dragline Bucket

BENDIX MACHINERY CO., INC.
401 Broadway, New York 13 Tel: Canal 6-5693

We offer, subject to prior sale, the following concrete paving equipment for the lump sum of $20,000.00, located at our yard in Charlotte, N. C. It has just been painted and overhauled and has been used very little.

34-E Ransome Duel Drum Paver #12141
Jaeger Finisher 42x034
Koehring Finisher LF881
Form Grader-Galion
Butler Cement Bin (60 ton) and Elevator
One-50 ton Johnson Aggregate Bin
One R.B. Subgrader
One set Grade Logs

BROWN PAVING COMPANY
Box 484 Tel. - 2423
LEXINGTON, N. C.

FOR SALE

Bay City Model 45, 1941 Backhoe, 6 cylinder Waukesha Gasoline Engine, 36" or 42" Bucket, 24" Pads. 40' Crane Boom if desired. Price $7850 fob Hartford with Backhoe only.

AMERICAN CONST. CO., INC.
100 Airport Road Hartford, Connecticut

FOR SALE

Osgood Model 200 with 39" magnet, new, complete, priced right
Lorain Model TL-20 6x6 Truck Crane with 39" new magnet, priced right
2½ yd. Esco Bucket, unused, for 80-D-N.W.
D-4 Bulldozer used 50 hours, like new
D-6 Angledozer used 300 hours, 2 months old, like new
Lorain Model 80 Shovel Diesel
No. 12 Cat. Patrol like new
Blaw-Knox 2 yard Model 724-H General Purpose digging, Clam Shell Bucket, new, unused, $1200.00

A. C. R. COMPANY
19615 Nottingham Rd.
Cleveland 10, Ohio

2-NEW TD9 MOTOR BLOCKS

With pistons and sleeves for sale.
Price $175 for one, $325 for two.

REV-LYN CONTRACTING CO.
9 Hudson Street Lynn, Mass.

FOR SALE

UNIVERSAL FORM CLAMPS

Surplus, ½" with set screw for all types of construction work. Price .20c apiece or $150. per ton. Twenty ton available.

SAMUEL S. MONSEIN
425 Semple St. Pittsburgh 13, Pa.

SEARCHLIGHT SECTION

FOR SALE

Surplus Equipment–Unused

Concrete Spreader, Blaw-Knox, 20-25 ft
TournaCrane, Model M-20 20' boom, 20-ton
TournaCrane, Model L-20, 40' boom, power controlled
Cement Gun, Model N-2, complete wth hose
ASPHALT PUMP, Trailer-mounted L-B Model 3C
Pump, centrifugal, 500 GPM 120#, Chrysler 6-cyl Eng.

Surplus Equipment–Used

TournaCrane, Model AD-3, 30' boom, 10-ton
Roller, Huber 3-wheel, 10-ton
27-E Rex Paver, complete
Dragline Bucket, 1¼-yd, Page Model TS
4000-Gal Tank Semi-trailer, Trailmobile 90% new
Other surplus equipment, vibrators, light plants, concrete mixers, drill steel, asphalt spayers, etc.
WANTED: 6", 7" and 8" Road forms.

TULLEY EQUIPMENT CO.
P. O. BOX 70
WEBSTER GROVES, 19, MISSOURI

FOR SALE

FOUR LOCOMOTIVE STEAM CRANES

FOR STANDARD GAUGE TRACK

2 Browning Crane & Shovel Co.
No. 15, Serial Nos. 2115 & 2356
1 Browning Crane & Shovel Co.
No. 20C, Serial No. 2421
1 McMyler-Interstate
No. 4, Serial No. 3634

The Port of New York Authority
Dept. of Purchase & Special Services
111 8th Avenue, New York 11, N. Y.
ALgonquin 5-100, Ext. 206

FOR SALE OR RENT

LORAIN 79 DIESEL SHOVEL

1½ cy. with crane—Dragline chain drive, fully rebuilt, excellent condition.

BENDIX MACHINERY CO., INC.
401 Broadway, N. Y. C. 13, N. Y.
Tel. Canal 6-5693

FOR RENTAL OR SALE

12—Vulcan hammers, size No. 1—2—3
1—New No. 1 Vulcan hammer (For sale only)
35—McK.-T. hammers, size 2—3—5—7—9B2—9B3—10B2—11B3
5—Pile Extractors, Vulcan 400-800, McK.-T. E2—E4
3—Drop hammers, 3000 to 4000 lbs.
Miscellaneous helmets for all types of hammers

MAHONEY & CLARKE, Inc.
217 Pearl St., N. Y. C. WH 3-0760

RAIL
STEEL PLATE
STRUCTURALS, PIPE, TUBING, WIRE ROPE,
FERROUS AND NON-FERROUS SCRAP

BOUGHT-SOLD LIQUIDATED

DULIEN STEEL PRODUCTS, Inc.
of Washington
9245 E. Marginal Way • Seattle 8, Wash. • Lander 6000

IF THERE IS

Anything you want

that other readers of this paper can supply

OR—

Something you don't want

That other readers can use, advertise it in the

SEARCHLIGHT SECTION

RAILS—TIES

TRACK ACCESSORIES

EVERYTHING FOR THE TRACK FROM

SWITCH TO BUMPER

SPECIAL OFFERING

We Offer
50,000 Good Used Creosoted Cross Ties

Immediate shipment

MORRISON RAILWAY SUPPLY CORP.

RAND BLDG. BUFFALO 2, N. Y.
EMPIRE BLDG. BIRMINGHAM 3, ALA.

100# RB RELAYING RAIL
500 TONS WITH BARS
IMMEDIATE SHIPMENT
M. K. FRANK
480 LEXINGTON AVENUE
NEW YORK, 17, N. Y.

RAILS
New & Relay
Track Accessories - Steel Storage Tanks
W. H. DYER CO. INC.
1859-X Railway Exchange Bldg.
St. Louis 1 Mo.

NEW—RAILS—Relayers

All sizes and weights. Also frogs, switches, spikes, bolts, tie plates, contractors' and mine equipment carried in stock.

M. K. FRANK

480 Lexington Ave. *New York, N. Y.* Reno, Nevada
Park Bldg. Pittsburgh, Pa. Carnegie, Pa.

NEW "SEARCHLIGHT" ADVERTISEMENTS

received by February 8th will appear in February 17th issue, subject to space limitations.

Classified Advertising Division
ENGINEERING NEWS-RECORD
330 W. 42nd St., New York 18, N. Y.

SEARCHLIGHT SECTION

(Classified Advertising)

A & P Equipment Corp. 138
American Air Compressor Corp. 142
American Construction Co., Inc. 149
Albert & Davidson Pipe Corp. 151
Albert Pipe Supply Co., Inc. 151
Bauer, L. W. 152
Bendix Machinery Co., Inc. 141, 147, 149, 150
Bernstein Bros. 149
Bester-Long Co. 138
Bixby Inc., R. W. 136
Brown Paving Co. 149
Biff 152
Calumet Paving Co. 144
Candler & Bass Inc. 151
Capitol Engineering Corp. 135
Carlson, A. H. 152
Carlyle Rubber Co., Inc. 146
Cement Asphalt Products Co. 137
Collignon Construction Co. 138
Columbia Metal & Iron Scrap Co., Inc. 137
Contractor Machinery Co. (Mo.) 140
Danbury Motor Exchange 144
Darien Corp. 151
Drachman Steel Corp., Hy. 148
Dreifus Co., Charles 141
Dulien Steel Products Inc. 150
Dyer Co., Inc. W. M. 150
East Coast Valve & Fitting Co., Inc. 152
Economy Co., Inc. 142, 143
Ehrbar Inc., Edward 140, 141, 142, 144, 147
Ellis-Novack Co. 147
Elphinstone Inc., D. C. 145
Empire Structural Steel Fabricators, Inc. 136
Equipment Corp. of America 141
Equipment Rental Service 146
Equitable Equipment Co., Inc. 138
Fabrikant Steel Products 148
Ferguson Construction Co. 148
Forsythe Equipment Co., Inc. 149
Frank, M. K. 150
Furnival Machinery Co. 144
Gallo, Thomas 137
General Construction Co. 148
General Electric Co. 136
Gilgenbach Co., The C. P. 148
Greensburg Machine Co. 144
Greenpoint Iron & Pipe Co. 151
Grey Steel Products Co. 143
Griner & Schmitz 152
Guion, H. P. 146
Gurley, W. & L. E. 152
Heat & Power Co., Inc. 138
Hebenstreit, Julius 148
Hercules Electric Machy. & Equip. Co. 143
Hickerson, Roy D. 152
Hodge & Hammond, Inc. 140, 142, 143
Hoisting Machinery Co. 145
Hyper-Humus Co. 137
Iron & Steel Products Inc. 141, 143
Kane & Assoc., Valentine B. 137
Keller & Sons, L. M. 138
Kilmain Sales Co., Inc., T. J. 148
Kissinger, D. T. 148
Latta Construction Co., J. E. 137
Long Island Beam Co. 142
Luff, R. M. 151
Lummus Co. 147
McCaffrey Co., Inc., M. P. 144
McClung-Logan Equipment Co. 142
McGurk Inc., E. B. 148
Mahoney-Clarke Inc. 146, 150
Maryland State Roads Comm. 135
Mertes Machinery Co. 147
Mississippi Valley Equip. Co. 140, 151
Monsein 149
Morrison Railway Supply Corp. 150
National Blue Print Co. 152
Nedcar Excavating Co. 148
Newtown Iron & Steel Corp. 146
O'Neill, A. J. 141
Pittsburgh Machy. & Equip. Co. 145
Port of New York Authority, The 150
Queensboro Steel Corp. 143
Reading Inc., Eugene P. 138
Republic Oil Refining Co. 137
Rev-Lyn Contracting Co. 149
Rex Marine Basin 148
Robinson Erection Co. 146
Rubberized Oil Plastics Inc. 136, 137
Sanderson & Porter, Agents 146
Schoonmaker Co., Inc., A. G. 145, 147
Sears & Bowers 138
Shannon & Co., J. Jacob 144
Sherman Transfer Co., The Roger 149
Smith Inc., L. B. 139, 140
Stanhope Inc., R. C. 140, 151
Stone the Crane Man 141, 152
Swabb Equipment Co., Inc., Frank 145, 152
Tasco Inc. 151
Tamblyn System 137
Tractor & Equipment Co. 140
Tulley Equipment Co. 150
Tuckahoe Construction Co., Inc. 148
Troy Slag Products Co., Inc. 148
Uehlein, T. J. 148
Van Houten Machinery Co. 145
Vilbro Equipment Co. 138
Vulcan Iron Works 149
Walsh, J. T. 145
Walsh Co., Richard P. 140
Warren-Knight Co. 152
Weil & Co., J. H. 152
Weiss Co., B. M. 138
White Co., David 152
Williams Construction Co. 144, 146
Wilson Engineering Corp. 137

PIPE

FOR IMMEDIATE DELIVERY
Odd and Large Sizes a Specialty
1/8" to 72"
LARGEST AND MOST COMPLETE STOCK
On Atlantic Seaboard
Our Own Shop Facilities for Bending—Coiling—Welding—Threading and Testing
Meeting All Standard Specifications
Tube-Turns, Welding Fittings and Flanges

If It's Made — Ask ALBERT!

● PIPE	● VALVES	● FITTINGS	● PILING
Electric Weld	Iron Body	Welding	ARMCO
Seamless	Forged Steel	Tube Turns	Youngstown
Spiral Weld	Cast Steel	Fabricated	
Lap Weld	and	Cast Iron	Pile Points
Butt Weld	Special	Forged Steel	Cobi Pile Tips
Steel - Wrought Iron	Alloys	Dresser	Pile Sleeves
Corrugated Culvert		Victaulic	Cobi-Timber Tips

STAINLESS STEEL PIPE, FITTINGS AND VALVES

ALBERT PIPE SUPPLY CO., Inc.
No. 13th & Berry Streets, Brooklyn, N. Y. EVergreen 7-8100

PILING

PIPE
VALVES and FITTINGS
All Sizes in Stock
NEW—USED
GREENPOINT IRON & PIPE CO. INC.
Bogart and Stagg Streets Brooklyn, N.Y.

FOR SALE
STEEL SHEET PILING and H-BEARING PILING
Large quantity of "Z" and M-115 Steel Sheet Piling, new and used, together with large tonnage of H-Beams and Bearing Piling for immediate sale.
Owned and offered by General Contractor.
R. M. LUFF
c/o City Waterworks Plant
Douglasdale Road Richmond, Virginia

FOR SALE—"Z" TYPE
STEEL SHEET PILING
700 Pcs 32-27 Ft. Beth ZP-32
99 Pcs 30 Ft. Beth ZP-38
850 Pcs 42-16 Ft. Carn M-112
Practically new—Prompt shipment
MISSISSIPPI VALLEY EQUIPMENT CO.
511 Locust St.—St. Louis, Mo.

FOR SALE
IMMEDIATE DELIVERY
Cast Iron Water Pipe & Fittings
150 - lb. pressure—B&S A.W.W.A. STANDARD
NEW PIPE—4-inch 10-inch
6-inch 12-inch
8-inch
RECONDITIONED—12-inch
16-inch
20-inch
24-inch
VALVES—All sizes—New and Reconditioned.
FLANGED PIPE— 6-inch New
8-inch New
10-inch New
12-inch Reconditioned
14-inch Reconditioned
C.I. WATER PIPE FITTINGS—All kinds and sizes.
SOIL PIPE—from 2 inch to 15 inch and Fittings.
Immediate delivery
TAGCO, INC.
111 Front St. Hempstead, L. I., N. Y.
Hempstead 2-5535-8857

900 TONS BETH. SP4—20 to 52 Ft.
800 TONS BETH. DP2—20, 27 & 60 Ft.
600 TONS BETH. ZP32—32 & 50 Ft.
R. C. STANHOPE, INC.
60 E. 42nd St. N. Y., 17, N. Y.

FOR SALE OR RENT
466 PCS. DP2 BETH. 50/60 Ft.
629 PCS. AP3 BETH. 14/22/25 Ft.
240 PCS. ZP32 BETH. 20/40/65 Ft.
DARIEN CORP.
60 E. 42nd St., New York 17, N. Y.

WROUGHT Steel Pipe
FITTINGS
VALVES
BOILER TUBES
ALBERT & DAVIDSON PIPE CORPORATION
2nd AVENUE..50th-51st STREET
● BROOKLYN 32, N. Y. ●
Windsor 9-6300

FOR RENT
STEEL SHEET PILING
CANDLER AND BASS
Birmingham Theatre Bldg.
Birmingham, Mich.

We do a Nation-Wide business in
USED **STEEL SHEET PILING** NEW
RENTED BOUGHT
150 pcs. 65 ft. Beth. DP-2—Illionis
48 pcs. 60 ft. Carn. M115—Ohio
170 pcs. 55-60-65 ft. Carn. M112—Missouri
75 pcs. 60 ft. Beth. DP2—New Jersey
84 pcs. 40-33 ft. Carn. M116—Florida
Also other lengths & sections at various locations
Nos. 0, 1, 2 Vulcan Pile Hammers and Driving Rigs
No. 7 9B3, 10B3, 11B3 McKiernan pile hammers
Nos. 400 and 800 Vulcan Pile Extractors
50-C and 80-C Super Vulcan Pile Hammers
All sizes Pile Hammers & Extractors for Rent
Regardless of location of your job, wire or write
MISSISSIPPI VALLEY EQUIPMENT CO.
509 Locust St., St. Louis, Mo.
"WE BUY STEEL PILING FOR CASH"

EVERY ISSUE
EVERY WEEK
Advertising of USED and Surplus New Construction Equipment is now accepted for all issues in the
SEARCHLIGHT SECTION of ENGINEERING NEWS-RECORD

WANT BUY
ALL SECTIONS
STEEL SHEET PILING
DARIEN CORP.
60 E. 42nd St. N. Y. 17, N. Y.

SURVEYING INSTRUMENTS

USED • REBUILT • SALE • RENT • REPAIRING

INSTRUMENT REPAIR BY CRAFTSMEN

Our craftsmen have a completely equipped department fully able to accommodate the repair of all makes of transits, levels and measuring tape. Work includes thorough overhaul, cleaning, oiling and adjustment.

Precision work guaranteed.

DAVID WHITE COMPANY
317 W. Court St., Milwaukee 12, Wis.

TRANSITS AND LEVELS

New or Rebuilt
Sale or Rent

Headquarters for REPAIRS — any make — Factory Service. We will also *buy* your old instruments or take them in *trade*.
A complete line of Engineering Instruments and Equipment for field or office. Write for catalog N.R.-92

WARREN-KNIGHT CO.
Manufacturers of Sterling Transits and Levels
136 No. 12th St., Philadelphia 7, Penna.

GURLEY

SURVEYING INSTRUMENTS
NEW • REBUILT

Replace your platinum wire or spider web reticle with the exclusive new Gurley *glass* reticle.

Patterns to suit every surveying need.

W. & L. E. GURLEY
Union Plaza, Troy, New York

RE-BUILT REPAIR RENT REAL EXPERTS

ALL MAKES
BUFF

69 Day St., New York

SPECIALIZED REBUILDING

of surveying and engineering instruments.
All makes and models expertly repaired in modern shop. All work guaranteed.

USED REBUILT INSTRUMENTS
for sale or rent

ROY D. HICKERSON
46 JOHNSON AVE. INDIANAPOLIS 19, IND.

FROM STOCK

Brand New & Rebuilt

TRANSITS & LEVELS

Fully equipped modern shop—all makes and models repaired — all work guaranteed — instruments rented

Midwest Representative: W. & L. E. Gurley

NATIONAL BLUE PRINT CO.
Established 1914.
210 S. Canal St. Chicago (6), Ill.

SURVEYING INSTRUMENTS REPAIRED

Send your transits and levels for complete overhauling and reconditioning by experienced factory-trained mechanics. Examination and estimates without cost. Your instrument should be sent express prepaid for a prompt repair estimate.

J. H. WEIL & CO.
1323 CHERRY ST. PHILADELPHIA, PA.
GURLEY REPRESENTATIVES

WE

REPAIR—all makes
SELL—new and used
RENT—near new equipment

GRINER & SCHMITZ
3012 McGee Trafficway
KANSAS CITY 8, MO.

CONTRACTORS—

Contact these advertisers for new or used surveying instruments
They will also repair damaged or inaccurate instruments.

WANTED

Additional Want Ads on page 137

WANTED

2¼ yd. Clam Shell Bucket
⅜ yd. Backhoe for Bay City Model 30
35 ft. Lattice Boom for Northwest Model 25

"STONE THE CRANE MAN"
415 Brainard Ave. *Temple* 1-2515 Detroit 1, Mich.

WANTED

¾ to 5 yard Shovels
2 to 10 yard Draglines
Tractors and Dozers

FRANK SWABB EQUIPMENT CO., INC.
Hazleton National Bank Building
HAZLETON, PA.
Telephone 4910

Compressors Wanted

STATIONARY - PORTABLE
LARGE OR SMALL

L. W. BAUER
22 Barnett Street Bloomfield, N. J.

WANTED

2-Traxson Pipelayers

(sidebooms) complete for Caterpillar D-6 or D-7 Tractors.

A. H. CARLSON
2119 West 71st St. Chicago, Ill. Republic 7-2700

WANTED

Mixer on Skids. Size 28S with gas or diesel power. Must be located in Middle West, be in A 1 shape and ready for delivery on March 1, 1949.

Paving Mixer, size 27E. Must be in good operating condition, located in Middle West and available for March 1, 1949.

Three compartment Batching Bin. Sixty to Ninety Ton Capacity. Must be in A1 Shape, located in Middle West and ready for delivery on March 1, 1949.

W. 7748 Engineering News Record
520 N. Michigan Ave., Chicago 11, Ill.

WANT TO BUY *NEW SURPLUS*

VALVES & PIPE FITTINGS

EAST COAST VALVE & FITTING CO., INC.
725 FIFTH AVE. BROOKLYN 32, N. Y.

WANTED

2500 Lin. Ft. good used

7" Road Forms

Also used Highway Widening Machine.

W-7696, Engineering News-Record
520 North Michigan Ave., Chicago 11, Ill.

Cards are arranged alphabetically by states - cities - names

PROFESSIONAL SERVICES

Additional cards are to be found on pages following

Palmer and Baker, Inc.

Consulting Engineers

For Problems of Transportation
Subaqueous Vehicular Tunnels
Rock Tunnels
Utility Tunnels
Bridges
Grade Separations
Highways
Airports
Traffic Studies
Parking Problems
Waterfront & Harbor Structures

Mobile, Alabama

Polk, Powell and Hendon

Engineers—Consultants

Harry H. Hendon—
Hugh A. Powell

Water Systems, Sewers and Sewage Treatment Plants, Steam and Hydro Plants, dams, drainage, industrial buildings, municipal planning reports, plans, estimates and construction supervision.

620 Chamber of Commerce Bldg.,
Birmingham 3, Ala.

John S. Cotton

Consulting Engineer

Hydroelectric, water supply, irrigation, and multiple purpose projects; flood and erosion control; river basin development planning; dams and their foundations; tunnels; marine structures; valuations; rates.
28 Brookside Dr., San Anselmo, Calif.

Heron Engineering Co.

Chemical, Mining, Industrial and Hydraulic Plants, Irrigation, Water Supply, Power and Sewerage Systems, Large Rockfill Dams, Airports, Oil, Gas and Water Pipe Lines.
2000 So. Acoma, Denver 10, Colorado
Chama, New Mexico.

Industrial Drilling and Boring Corp.

FOUNDATION BORINGS
GEOLOGICAL SURVEYS
P. O. Box 1206 — 1746 E. Adams St.
Jacksonville, Florida

Patchen & Zimmerman

Engineers

Construction Plant, Cofferdams, Structures, Industrial Plants, Dams, Sewerage and Sewage Treatment, Water Supply and Treatment, Supervision, Surveys, Reports.
Daniel Field Airport,
Augusta, Ga.

Alvord, Burdick & Howson

Charles B. Burdick
Louis B. Howson Donald H. Maxwell

Consulting Engineers

Water Works	Sewerage
Water Purification	Sewage Treatment
Flood Relief	Power Generation
Drainage	Appraisals

Room 1401
20 North Wacker Drive, Chicago

Consoer, Townsend & Associates

Water Supply—Sewerage—Flood Control & Drainage — Bridges — Express Highways—Paving—Power Plants, Appraisals — Reports — Traffic Studies—Airports.
351 East Ohio St., Chicago 11, Illinois

Greeley and Hansen

Engineers

Water Supply, Water Purification
Sewerage, Sewage Treatment
Flood Control, Drainage, Refuse Disposal
220 S. State Street, Chicago 4

Economy

The service of the Consultant can usually be an economy in coping with your most intricate problems.

De Leuw, Cather & Company

CONSULTING ENGINEERS

Transportation, Public Transit and Traffic Problems

Industrial Plants	Grade Separations
Railroads	Expressways
Subways	Tunnels
Power Plants	Municipal Works

150 North Wacker Drive
Chicago 6, Ill.
79 McAllister Street
San Francisco 2, Calif.

Harza Engineering Co.

Consulting Engineers
L. F. Harza
E. Montford Fucik Calvin V. Davis
Hydro-Electric Power Projects
Transmission Lines, System Management, Dams, Foundations, Harbor Structures, Soil Mechanics
400 W. Madison St., Chicago 6, Ill.

Hazelet & Erdal

Consulting Engineers.

Fixed and Movable Bridges	Designs Supervision
Superhighways	Investigations
Industrial Bldgs.	Reports
Airports	Dams Surveys

Monadnock Block, Chicago 4, Ill.
Dixie Terminal Bldg., Cincinnati 2, O.
Heyburn Bldg., Louisville 2, Ky.

Pioneer Service & Engineering Co.

Consulting and Design Engineers
Operations - - Purchasing
Steam - - Hydraulic - - Gas
Public Utilities - - Industrials
231 So. La Salle St. Chicago 4

Sargent & Lundy

ENGINEERS

Steam and Electric Plants
Utilities—Industrials
Studies—Reports—Design
Supervision
Chicago

Interstate Engineering

Consulting Engineers.

Design and Supervision of Municipal Improvements
Water Works, Sewage, Drainage, Surveys
Foundation Borings
Rock Island, Illinois.

Jenkins, Merchant & Nankivil *Consulting Engineers*

Water Systems, Power Development, Flood Control, Airports, Traffic Surveys, Municipal Improvements, Sewerage, Industrial Plants, Recreational Facilities, Investigations and Reports.
805 East Miller St., Springfield, Ill.

Moore & Owen

Engineers

Water, Sewage, Incineration Refuse Disposal, Airfields.
Complete Water & Sewage Laboratories—Industrial Wastes.
1456 N. Delaware St., Indianapolis 2, Ind.

Boyd E. Phelps, Inc.

Engineers

Water Supply and Purification
Sewage and Industrial Waste Treatment
Power Generation, Airfields, Reports, Investigations, Appraisals.
622½ Franklin St., Michigan City, Ind.

Chas. W. Cole & Son

Sewerage, Sewage Treatment, Industrial Wastes, Water Supply, Water Treatment, Airports, Industrial Buildings.
Chas. W. Cole, Sr. Chas. W. Cole, Jr.
Ralph J. Bushee, M. J. McElain
Wilber H. Gartner
220 W. LaSalle, South Bend, Ind.

Stanley Engineering Company, *Consulting Engineers*

Airports - Drainage - Electric Power
Flood Control - Industrial - Rate Studies - Sewerage - Valuations - Water Works
Hershey Building, Muscatine, Ia.

Saxe, Williar & Robertson

ENGINEERS • CONSULTANTS

Industrial Buildings
Bridges - Structures - Foundations
Highway & Regional Planning
Harbor Works • Port Development
Reports • Investigations

130 West Hamilton St.,
Baltimore 1, Maryland

G. Douglas Andrews Associates

Engineering Consultants

General Engineering and Consulting Services
Valuations and Management
212 Washington Avenue
Towson, Baltimore 4
Maryland

Whitman, Requardt and Associates

Engineers — Consultants

Civil — Sanitary — Structural
Mechanical — Electrical
Reports, Plans, Supervision, Appraisals
1304 St. Paul Street
Baltimore 2, Maryland

Chas. T. Main, Inc.

Engineers

Design and Supervision of Construction for Industrial Plants
Electrical, Steam and Hydraulic Engineering
Investigations, Reports and Appraisals
Chamber of Commerce Bldg.
80 Federal St., Boston, Mass.

Metcalf & Eddy

ENGINEERS

Investigations Reports Design
Supervision of Construction and Operation
Management Valuation Laboratory
Statler Building, Boston

Philip B. Streander and Affiliates

Consulting Sanitary Engineers

Water Supply, Treatment, Distribution
Sewage, Sewage Treatment
Plans, Supervision, Reports
120 Tremont Street, Boston 8, Mass.

Burns & McDonnell Engineering Company

Consulting Engineers 50th Year
Water Works, Light and Power, Sewerage, Reports, Designs, Appraisals
Rate Investigations.
Box 7088 Country Club P. O.
95th & Troost, Kansas City 2, Mo.

Black & Veatch

Consulting Engineers

4706 Broadway
Kansas City, Missouri

Sewerage, Sewage Disposal, Water Supply, Water Purification, Electric Lighting, Power Plants, Valuations, Special Investigations, Reports and Laboratory Service

E. B. Black E. L. Filby
A. P. Learned N. T. Veatch, Jr.
F. M. Veatch J. F. Brown
R. E. Lawrence

Harrington & Cortelyou

Consulting Engineers

Frank M. Cortelyou
E. M. Newman F. M. Cortelyou, Jr.
Movable and Fixed Bridges of All Types, Foundations, and Related Structures.
1004 Baltimore Kansas City 6, Mo.

Russell & Axon

Consulting Engineers
Geo. S. Russell F. E. Wenger
Joe Williamson, Jr.
Water Works, Sewerage, Sewage Disposal, Industrial and Power Plants, Appraisals.
408 Olive Street Municipal Airport
St. Louis 2, Mo. Daytona Beach, Fla.

Sverdrup & Parcel

Consulting Engineers.

Bridges, Structures and Reports. Industrial and Power Plant Engineering.
Syndicate Trust Bldg., St. Louis 1, Mo.

A. L. Alin

Consulting Engineer

Dams
Hydroelectric Power
Flood Control
5927 North 24th St.
Omaha 11, Nebraska

Eugene T. Lake

Naval Architect - Mechanical Engineer

Unusual Problems
Special machines or vessels using Mechanics, Hydraulics or Electronics
11 North Ave., East, Cranford, N. J.
Cranford 6-2013

Benjamin L. Smith & Associates

Engineers

Investigations—Reports
Designs—Supervision—Valuations
Municipal Engineering and Public Utilities
11 North Pearl St. Albany 7, N. Y.

E. Lee Heidenreich, Jr.

Consulting Engineer

Quarries	Plant Layout
Crushing Plants	Storage
Milling Plants	Methods
Concrete Products Plants	Design Appraisals

67 Second St. Newburgh, New York

Andrews & Clark

CONSULTING ENGINEERS

DESIGN—CONSTRUCTION
SUPERVISION—REPORTS

305 East 63rd Street
New York 21, N. Y.

Barker & Wheeler

Water Supply	Utility and
Sewerage	Industrial
Sewage Disposal	Valuations
Power Systems	Reports

New York City, 11 Park Place
Albany, N. Y., 36 State St.

Clinton L. Bogert Associates

Consulting Engineers

Water and Sewage Works

Refuse Disposal	Industrial Wastes
Drainage	Flood Control

624 Madison Ave., New York 22, N. Y.

Bowe, Albertson & Associates *Engineers*

Sewerage—Sewage Treatment
Water Supply—Purification
Refuse Disposal—Analyses
Valuations—Reports—Designs
110 William St., 2083 Kings Hgway.
New York 7, N. Y. Fairfield, Conn.

Buck, Seifert & Jost

Consulting Engineers

(Formerly Nicholas S. Hill Associates)

Water Supply — Sewage — Hydraulic Developments, Reports and Valuations.
Chemical and Biological Laboratories.
New York City, 112 E. 19th St.

Christiani & Nielsen

ENGINEERS

Harbor Works Bridges Foundations
Industrial Buildings Power Plants
Dams Tunnels Highways Railroads
350 Fifth Ave., New York 1, N. Y.
Buenos Aires Rio de Janeiro Lima
Montevideo Caracas Mexico Bogota
Paris London The Hague
Stockholm Oslo Copenhagen
Cape Town Bangkok

Cards are arranged alphabetically by states - cities - names

PROFESSIONAL SERVICES

Additional cards are on preceding and following pages

Hugh L. Cooper & Co.

Incorporated

General Hydraulic Engineering

Including the design, financing, construction and management of hydro-electric power plants.

350 Fifth Ave., New York 1, N.Y.

Ebasco Services Incorporated

Engineers - Constructors
Business Consultants
Design and Construction
Financial and Operating Consultation
Investigations and Reports
Consulting Engineering

Two Rector Street — New York

Fay, Spofford & Thorndike

Engineers

Charles M. Spofford — Ralph W. Horne
John Ayer — William L. Hyland
Bion A. Bowman — Frank L. Lincoln
Carroll A. Farwell — Howard J. Williams

Bridges and Industrial Plants
Water Supply and Sewerage Works
Port and Terminal Works — Airports

Valuations, Investigations, Designs, Supervision of Construction.

11 Beacon St., Boston, Mass.
420 Lexington Ave., N. Y.
(Graybar Bldg.)

Fraser-Brace Engineering Co., Inc.

DESIGN - CONSTRUCTION - REPORTS - APPRAISALS
COMPLETE MANAGEMENT OF PROJECTS

10 East 40th St.,
New York 16, N. Y.

Hardesty & Hanover

Consulting Engineers

Successors to Waddell & Hardesty

Bridges
Long Spans of All Types
Movable—Lift, Bascule and Swing
Hanover Skew Bascule
Steel and Concrete Spans
Grade Crossing Eliminations

Other Structures
Foundations
Supervision, Reports, Appraisals

101 Park Avenue, New York 17, N. Y.

Frederic R. Harris

FREDERIC R. HARRIS, INC.

ENGINEERS

DESIGNS — MANAGEMENT
REPORTS — APPRAISALS

Harbor & Waterfront Work, Floating Drydocks, Port Development, Hydro-Electric Development, Flood Control, Water Supply, Sanitary & Industrial Waste Disposal.

New York — 27 William Street
Philadelphia — Fidelity-Phila. Bldg.
San Francisco — Ferry Bldg.
Vera Cruz, Mexico

Lockwood, Kessler & Bartlett, Inc.

ENGINEERS — SURVEYORS

General Engineering Services
Aerial and Ground Surveys
Photogrammetric Mapping
Domestic and Foreign

32 Court St. — Brooklyn 2, N. Y.

Howard, Needles, Tammen & Bergendoff

Consulting Engineers
Bridges and Structures

New York, N. Y., 55 Liberty St.
Kansas City, Mo., 921 Walnut St.

Knappen Tippetts Abbett Engineering Co.

(Knappen Engineering Co.)

Ports, Harbors, Flood Control, Power, Dams, Bridges, Tunnels, Highways, Airports, Traffic, Foundations, Water Supply, Sewerage
Reports — Design — Supervision
Consultation

62 West 47th Street, New York City

Modjeski and Masters

Consulting Engineers

Design, Supervision, Reports, Inspection and Investigations, of Bridges, Structures, and Foundations.

535 Fifth Ave. — State Street Bldg.
New York, N. Y. — Harrisburg, Penna.

Moran, Proctor, Freeman & Mueser

Consulting Engineers

Foundations for Buildings, Bridges and Dams; Tunnels, Bulkheads, Marine Structures; Soil Studies and Tests; Reports, design and supervision.

New York 17, N.Y., 420 Lexington Ave.

PARDO, PROCTOR, FREEMAN & MUESER
Ap. Corrfos 614 — Caracas, Venezuela.

Parsons, Brinckerhoff, Hall & Macdonald

ENGINEERS

Airports, Bridges, Tunnels, Highways, Traffic and Transportation Reports, Subways, Foundations, Harbor Works, Valuations, Power Developments, Industrial Buildings, Dams, Sewerage, Water Supply.

51 Broadway, New York 6, N. Y.

Malcolm Pirnie Engineers

Civil & Sanitary Engineers

Malcolm Pirnie — Ernest W. Whitlock
Richard Hazen — G. G. Werner, Jr.

Investigations, Reports, Plans, Supervision of Construction and Operations. Appraisals and Rates

25 W. 43rd St., New York 18, N. Y.

The Pitometer Company

Engineers

Water Waste Surveys
Trunk Main Surveys
Water Distribution Studies
Penstock Gaugings

New York, 50 Church St.

Alexander Potter Associates

Consulting Engineers

Water Works, Sewerage, Industrial Wastes, Hydraulic Works, Reports, Designs, Appraisals.

50 Church St., New York, N. Y.

Clyde Potts

Weston Garett-Stanley N. Williams
Consulting Sanitary Engineers
Sewerage and Sewage Disposal
Water Works and Water Supply
Valuations and Appraisals
30 Church Street, New York 7

Sanderson & Porter

Engineers and Constructors

New York — Chicago
San Francisco — Los Angeles

Scheidenhelm, F. W.

Consulting Engineer

Hydraulic Engineering; Hydro-electric Development; Water Supply; Flood Control; Engineering Problems relating to Water Rights and Water Power Law; Appraisals. 50 Church Street, New York 7, N. Y.

Seelye, Stevenson & Value

Consulting Engineers
Successors to
Elwyn E. Seelye & Company
101 Park Avenue
New York 17, N. Y.

Airports, Highways, Dams, Concrete, Steel, Welding, Foundations, Stadia, Appraisals & Industrial Plants.

Elwyn E. Seelye, Albert L. Stevenson
Burnside R. Value
L. C. Hammond, H. S. Woodward, Austin M. Rice, C. H. Hamilton, V. J. Pacello, C. M. Throop, R. Sahlberg, W. D. Bailey, J. U. Wiesendanger, P. King.

Frederick Snare Corporation

Engineers—Contractors

Harbor Works, Bridges, Power Plants, Dams, Docks and Terminals.

Difficult and Unusual Foundations A Specialty.

233 Broadway, New York City 7
1400 South Penn Square, Philadelphia

Havana, Cuba — Lima, Peru
Bogota, Colombia, Caracas, Venezuela, San Juan, Puerto Rico, Guayaquil, Ecuador

D. B. Steinman

Consulting Engineer

Bridges
Design, Construction, Strengthening, Investigations, Reports, Advisory Service.

117 Liberty St., New York 6, N.Y.

Sy-Co Engineers

G. A. Syversen, G. Randolph Syversen
H. Syversen—Consultants
Industrial Plants, Commercial Buildings, Power Plants,
Materials Handling Systems
Estimates—Reports—Design
Supervision
39 Broadway — New York 6, N. Y.

Taylor, Henry W.

Water Supply, Sewerage
Garbage Disposal, Incineration
Industrial Wastes Disposal
Hydraulic Developments

11 Park Place, New York City

The J. G. White Engineering Corporation

Design—Construction
Reports—Appraisals

80 Broad Street, New York 4

James M. Caird

Established 1898

C. E. Clifton, H. A. Bennett
Chemists and Bacteriologist
WATER ANALYSIS
Tests of Filter Plants

Cannon Building, Troy, N. Y.

Keis & Holroyd

Consulting Engineers

Formerly Solomon & Keis
Since 1906
Water Supply, Sewage Disposal, Garbage & Refuse Incineration, Industrial Buildings

Troy, N. Y. — Ft. Lauderdale, Fla.

The F. A. Schneider Co.

Consulting Engineers

Commercial Buildings, Process Plants, Layouts & Design.

Box 310, Bucyrus, Ohio

The Austin Company

Design and Construction

Manufacturing and Process Plants
Airports & Air Transport Buildings
Railroad Terminals and Facilities
Power Plants—Industrial & Institutional
Industrial Office Buildings and Laboratories

Reports and Plant Location Surveys

New York — CLEVELAND — Los Angeles
Chicago — Houston — Oakland
Detroit — Seattle

Havens and Emerson

W. L. Havens — C. A. Emerson
A. A. Burger — F. C. Tolles — F. W. Jones
CONSULTING ENGINEERS
Water, Sewage, Garbage, Industrial Wastes, Valuations—Laboratories

Leader Bldg. — Woolworth Bldg.
Cleveland 14 — New York 7

Jones & Henry

Consulting Sanitary Engineers

Water Works
Sewerage & Treatment
Waste Disposal

Security Building — Toledo 4, Ohio

Benham Engineering Co.

ENGINEERS

Webster L. Benham
M. Am. Soc. C. E.
Water Supply & Purification, Sewerage, Sewage Disposal, Electric Light & Power, Roads, Drainage
Am. National Bldg., Oklahoma City, Okla.

Capitol Engineering Corporation

Engineers—Constructors—Management

Bridges — Dams
Planning — Airports
Sewage Systems — Water Works
Design and Surveys — Roads & Streets
Executive Offices Dillsburg, Penna.

Brookhart & Tyo, Inc.

Engineers

Highways
Industrial Buildings
Bridges and Structures
Design, Estimates, Reports

6th & Maclay Sts. — Harrisburg, Pa.

Gannett Fleming Corddry & Carpenter, Inc.

ENGINEERS

Water Works, Sewage, Industrial Wastes & Garbage Disposal — Roads, Airports, Bridges & Flood Control.
Town Planning, Appraisals, Investigations & Reports.

Scranton Pa. — Pittsburgh, Pa.
Harrisburg, Pa. — New York, N. Y.

Albright & Friel, Inc.

Consulting Engineers

Water, Sewage and Industrial Waste Problems, Airfields, Refuse Incinerators, Power Plants, Industrial Buildings, City Planning, Reports, Valuations, Laboratory.
1528 Walnut St., Philadelphia 2, Pa.

Day & Zimmermann, Inc.

Engineers

Designs, Construction, Valuations
Reports and Management
Public Utilities and Industrials

Philadelphia
New York — Packard Building — Chicago

Frederick H. Dechant

ENGINEER

Associated with Frederic R. Harris
Water Works, Industrial Wastes, Sewerage, Recovery Processes, Hydraulic Works, Steam, Hydro Gas Power Plants.
Philadelphia Fidelity Phila. Trust Bldg.
New York — 27 William St.

Cards are arranged alphabetically by States - cities - names

PROFESSIONAL SERVICES

Additional cards are to be found on preceding pages

Electric Construction Company Inc.

Engineer — Contractors

Design — Erection — Maintenance of
Power Plant, Sub Stations
Transmission and Distribution Lines
Modern Equipment
Philadelphia, Pa.

Fridy - Gauker - Truscott & Fridy

Architects & Engineers

Water . Sewerage . Industrial Waste Incineration Power & Distribution Airport . Building . Town Planning
1321 Arch Street . Philadelphia 7, Pa.

William A. Goff, Inc.

General Engineering and Consulting Services

Water, Sewerage, Refuse Incineration, Industrial Buildings, Power Plants, Airports, Town Planning, Plans, Supervision, Valuations, Reports.
Broad St. Station Bldg., Phila. 3, Pa.

Hunting, Larsen & Dunnells

Engineers

Industrial Plants—Structures
Bridges—Steel and Reinforced Concrete
Design and Supervision—Reports
1150 Century Bldg., Pittsburgh, Pa.

Morris Knowles, Inc.

Engineers

Water Supply and Purification, Sewerage and Sewage Disposal, Valuations, Laboratory, City Planning.
Pittsburgh, Pa.

Gilbert Associates, Inc.

Engineers and Consultants

Design and Supervision of
Steam, Hydro, Water Supply, Sewage Disposal, Diesel Plants and Airports, Valuations, Laboratory
Reading, Pa. 412 Washington St.
New York 61 Broadway
Houston Oil & Gas Building
Washington, D. C. 1417 K St., N. W.

Michael Baker, Jr., Inc.

THE BAKER ENGINEERS
CIVIL ENGINEERS, PLANNERS, AND SURVEYORS.
MUNICIPAL ENGINEERS
Airport Design—Sewage Disposal Systems—Water Works Design and Operation—Cons. Sur.—Surveys & Maps.
Rochester, Pa. Jackson, Miss.

Lacy, Atherton, Wilson & Davis

Architects and Engineers

Hotel Sterling Building.
Wilkes-Barre, Pa.

J. E. Sirrine Company

Engineers

Design Construction
Industrial Plants Electric Power
Water Supply & Purification
Sewage Disposal Reports
Greenville, South Carolina

Sullivan and Hoebel

Railroad Consulting Service

Terminals, Relocations,
Grade Crossing Elimination,
City Planning Problems,
Industrial Tracks and Yards,
Reports — Plans — Specifications
615 Empire Bldg., Knoxville, Tenn.

Frank A. Busse

Consulting Engineer

Industrial Buildings, Viaducts, Bridges, Foundations, Harbor Works, River Barge Terminals, City Planning, Airports, Sewage Treatment.
669 Shrine Building, Memphis 3, Tenn.

Lockwood & Andrews

Consulting Engineers

Airports, Paving, Industrial Plants, Drainage & Sewerage, Site Locations, Soils & Foundations, Water Supply, Structures, Harbor Works, Valuations, Reports — Design — Supervision
Union Nat'l Bank Bldg., Houston, Tex.

Myers & Noyes & Associates

Consulting Engineers

Water Supply, Sewage, Flood Control, Shore Protection, Irrigation and Reclamation, Reports and Valuations
2204 Tower Petroleum Bldg., Dallas, Texas
320 Wilson Building
Corpus Christi, Texas

Lonnie Beirne Perrin

Estimating, Consulting Reports & Appraisals

Public Buildings-Bridges and Piers
R. F. D. 4 • Richmond, Virginia
Phone 5-2693

Chas. L. Hilborn, Jr.

Engineers - Contractors

Mining, Chemical and Processing Plants—Maintenance & Construction

Solving difficult time limits or unusual Problems of continued normal operation while under construction handicaps. A specialty.

501-513 Coal & Coke Bldg.,
Bluefield, W. Va.

Inspecting and Testing

Robert W. Hunt Co.

Inspecting and Testing Engineers

Inspection and Tests
of Materials
Supervision of Construction
for
Utility Plants,
Buildings, Bridges,
Machinery and Equipment

General Offices and Laboratories
175 West Jackson Boulevard, Chicago
New York — Pittsburgh — St. Louis

OFFICIAL PROPOSALS

(Continued from page 134)

Bids: February 14, 1949 (820)

Storm Sewers

DEPARTMENT OF PUBLIC WORKS
Middletown, New York

Sealed proposals will be received by the Board of Estimate and Apportionment of the City of Middletown, New York, at the office of the Commissioner of Public Works until 4:00 p. m. on February 14, 1949 for installation of approximately 10,700 feet of various size reinforced concrete pipe in the public streets of Middletown, New York together with necessary manholes, catch basins, etc.

Proposals will be publicly opened and read at 4:00 p. m. on February 14, 1949.

Plans and specifications may be examined at the office of the Commissioner of Public Works, City Hall, Middletown, New York. A deposit of $25.000 will be required for each complete set of plans and specifications distributed. No refund will be made.

Proposals shall be made upon the forms provided therefor, in accordance with specifications, copies of which may be secured at the Office of said Commissioner.

The Board of Estimate and Apportionment reserves the right to reject any and all bids and to accept the bid they consider to be in the best interest of the City of Middletown.

By order of
THE BOARD OF ESTIMATE AND APPORTIONMENT
Geary W. Chumard
COMMISSIONER OF PUBLIC WORKS

Bids: February 8, 1949 (826)

Postponement of Bid Date

NOTICE TO CONTRACTORS
CONSTRUCTION OF
ADDITIONS TO LEY CREEK
TREATMENT PLANT
ONONDAGA COUNTY, N. Y.

Notice is hereby given that the receiving and opening of bids set for 10 A.M. on January 17, 1949, has been postponed to 10 A.M. E.S.T., February 8, 1949, and separate sealed bids for Additions to the Ley Creek Sewage Treatment Plant will be received for the Onondaga Public Works Commission by the County Purchasing Agent, Room 107, County Court House, Syracuse 2, New York, until 10 A.M. E.S.T., February 8, 1949, and there at said office publicly opened and read aloud for:

OFFICIAL PROPOSALS

Contract 1—GENERAL CONSTRUCTION
Contract 2—PLUMBING
Contract 3—HEATING AND VENTILATING
Contract 4—ELECTRICAL

These contracts provide for the construction of additional units at the existing Activated Sludge Plant (30 mgd capacity), including sludge digestion, gas collection and utilization for power, vacuum filtration; a two story and basement building about 80 by 86 feet; miscellaneous equipment including 30 mgd additional pumping capacity, etc.

Information for Bidders and all Contract Documents may be examined at the said office and copies of the same obtained upon payment of $75.00 for each set. Any bidder who has submitted a bonafide proposal and who returns one set in good condition within thirty days of the date of receiving bids will be refunded his deposit for one set. One-half the deposit for additional sets returned by bidders or non-bidders will be refunded for such sets returned in good condition within thirty days of the date of receiving bids. Bidders may obtain additional copies of the drawings on deposit of $65.00 for each and copies of the specifications, bid forms, etc. upon deposit of $15.00 on which one-half the deposit will be refunded under conditions above noted. Single sheets of the drawings may be obtained for $1.00 each on which there will be no refund.

Copies of the above described Contract Documents may be examined at no expense at the above office of the Purchasing Agent and at the office of the Onondaga Public Works Commission, Room 405, County Court House.

The right is reserved to waive any informalities in the bids and to reject any and all bids.

Onondaga County
By: Robert W. Sollinger
Purchasing Agent

Dated, January 12, 1949.

Bids: February 14, 1949 (821)

Sewage Disposal

DEPARTMENT OF PUBLIC WORKS
Middletown, New York

Sealed proposals will be received by the Board of Estimate and Apportionment of the City of Middletown, New York at the office of the Commissioner of Public Works until 4:00 p. m. on Februray 14, 1949 for the construction of secondary sewage treatment works at the present municipal sewage disposal plant.

Bids will include the construction of
2—105' diameter stone filters
2—105' diameter clarifiers
1 new digester
2 new enclosed sludge drying beds
pumping station

Alterations to present facilities together with all necessary piping, fitting of concrete structures.

Proposals will be publicly opened and read at 4:00 p. m. February 14, 1949.

Plans and specifications may be examined at the office of the Commissioner of Public Works, City Hall, Middletown, New York. A deposit of $25.00 will be required for each complete set of plans and specifications distributed. No refund will be made.

Proposals shall be made upon the forms provided therefor, in accordance with specifications, copies of which may be secured at the Office of said Commissioner.

The Board of Estimate and Apportionment reserves the right to reject any and all bids and to accept the bid they consider to be in the best interest of the City of Middletown.

By order of
THE BOARD OF ESTIMATE AND APPORTIONMENT
Geary W. Chumard
COMMISSIONER OF PUBLIC WORKS

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2538) will be received by Bureau of Reclamation, Denver, Colorado, until 10 a. m., March 15, 1949, and then publicly opened for furnishing labor, equipment, and materials and performing all work for the construction of a 15,000-kva substation near Blythe, California, Davis Dam Project, Arizona-Nevada. Principal items are approximately: constructing concrete footings and control house; erecting steel structures; and other work. Time allowed for completion will be 425 days. For particulars, address the Bureau of Reclamation, Boulder City, Nevada; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(837)

ADVERTISERS IN THIS ISSUE

Air Reduction 37
American Cast Iron Pipe Co..... 25
American Conveyor Co..... 119
American Hot Dip Galvanizers Assn.... 118
Arkwright Finishing Co..... 110
Armco Drainage & Metal Products, Inc. 2nd Cover

Bay City Shovel 8
Beech Aircraft Corp..... 10
Behlen Mfg. Co..... 126
Belmont Iron Wks..... 131
Bethlehem Steel Co..... 26
Blair Co., P. F..... 107
Broderick & Bascom Rope Co..... 112
Brunson Instrument Co..... 106
Buchanan Lumber Corp..... 107
Butler Bin Co..... 33
Byers Co., A. M..... 83

Caine Steel Co..... 106
Carnegie-Illinois Steel Co..... 39
Ceco Steel Products Corp..... 35
Cement Gun Co..... 91
Cleaver-Brooks Co..... 32
Cleco Div., Reed Roller Bit Co..... 103
Cole Mfg. Co., R. D..... 129
Complete Machinery & Equip. Co..... 128
Construction Machinery Co..... 99

Dearborn Chemical Co..... 38
Davenport Locomotive Wks..... 103
Dow Chemical Co., The..... 28

Eastman Kodak Co..... 93
Economy Forms Co..... 121
Electric Storage Battery Co..... 108
Electroline Co..... 125
Ellicott Machine Corp..... 111
Ellis & Ford Mfg. Co..... 125
Erie Pump & Engine Wks..... 129

Fairbanks-Morse & Co..... 128
Flexible Steel Lacing Co..... 127
Flink Co..... 131
Foote Co., Inc., The..... 36
Foster Co., L. B..... 105

General Excavator Co., The..... 115
Goodall Rubber Co..... 87
Goodrich Co., The B. F..... 1
Gorman-Rupp Co., The..... 123
Griffin Wellpoint Corp..... 126
Gulf Oil Corporation..... 24
Gunite Concrete & Construction Co..... 126
Gunite Construction Corp..... 100

Hendrix Mfg. Co..... 20
Hyatt Bearings Div., General Motors Corp..... 14

Imperial Pencil Tracing Cloth..... 124
Ingersoll-Rand 27
International Harvester Co..... 22, 23
Irvington Form & Tank Corp..... 131

Jaeger Machine Co., The..... 31
Jenkins Bros..... 21
Josam Mfg. Co..... 29
Joy Mfg. Co..... 9

Keasbey & Mattison Co..... 30
Kinnear Mfg. Co..... 119
Koehring Co..... 16, 17
Kohler Co..... 104

Layne & Bowler, Inc..... 2
LeTourneau, R. G..... 96, 97
Leupold & Stevens Instruments..... 109
Lewis & McDowell, Inc..... 129
Lock Joint Pipe Co..... 4
Lone Star Cement Corp..... 40
Lufkin Rule Co..... 12

MacArthur Concrete Pile Corp..... 111
Macomber, Inc..... 98
Michigan Power Shovel Co..... 3rd Cover
Moretrench Corp..... 44
Mott Core Drilling Co..... 100
Murphy Diesel Co..... 5

National Clay Pipe Mfgrs., Inc 116
New York Engineering Co..... 113
Nordstrom Valve Div., Rockwell Mfg. Co. 81
Northwest Engineering Co..... 3

Ohio Locomotive Crane Co..... 131
Osgood Co., The..... 115
Owen Bucket Co., The..... 156
Ozalid Div., General Aniline & Film Corp..... 95

Pennsylvania Drilling Co..... 115
Pittsburgh-Des Moines Steel Co..... 119
Portland Cement Assoc..... 83
Pressure Concrete Co..... 120

Quaker State Oil Corp..... 101

Railway Express Agency, Air Express Div..... 90
Raymond Concrete Pile Co..... 11
Rogers Bros. Corp..... 99
Ryerson & Sons, Inc., Joseph T..... 42

Sauerman Bros..... 120
Schield Bantam Co., Inc., The..... 13
Shotcrete Construction Co..... 115
Sinclair Refining Co..... 18, 19
Smith Co., S. Morgan..... 34
Spencer, White & Prentis, Inc..... 125
Sprague & Henwood, Inc..... 131
Standard Oil of California..... 88
Standard Steel Works..... 100
Stang Corp., John W..... 86
Stewart Construction Co..... 131

Texas Co., The..... 6, 7
Timber Structures, Inc..... 126
Timken Roller Bearing Co..... 4th Cover
Tinney Drilling Co..... 106
Tube Turns, Inc..... 15

Underpinning & Foundation Co., Inc.... 120
U. S. Steel Corp. Subsidiaries..... 39, 46
Universal Atlas Cement Co..... 46

Vacuum Concrete, Inc..... 129
Victaulic Co. of America..... 89
Vulcan Iron Wks..... 92

Waukesha Motor Co..... 102
Wellman Engineering Co..... 86
White Co., David..... 82
White Mfg. Co..... 106
Williams & Co., J. H..... 120
Wisconsin Motor Corp..... 91

Yaun Dragline & Bucket Co..... 131
Yuba Mfg. Co..... 114

PROFESSIONAL SERVICES ***151, 152, 153***

SEARCHLIGHT SECTION

(Classified Advertising)

Employment
Positions Vacant 135, 136
Selling Opportunities Offered..... 136
Positions Wanted 136, 137
Selling Opportunities Wanted..... 137
Employment Services 137
Labor Bureaus 137

Educational
Schools 137
Tutoring 137

Business Opportunities
Offered 137

Property
For Sale 137

Equipment
(Used or Surplus New)
For Rent 147, 149
For Sale 137-152
Piling 151
Pipe 151
Rail 150
Surveying Instruments 152

Wanted
Equipment 137, 152
Miscellaneous 137

ADVERTISERS INDEX **150**

More Dirt Moves Faster When
OWEN BUCKETS
swing over dump trucks

This claim is strongly substantiated by the increasing numbers of excavating contractors who have standardized on Owen Buckets to "Insure a Bigger Day's Work".

Long popular, Owen design and construction characteristics make for consistent "ease of operation" with "A Mouthful at Every Bite" and a clean and rapid discharge.

THE OWEN BUCKET CO. 6010 Breakwater Ave., Cleveland, O.

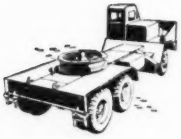
BRANCHES: PHILADELPHIA • CHICAGO • BERKELEY, CALIF.

A MOUTHFUL AT EVERY BITE

"Because I figured competition's bound to get tougher. I wanted a shovel that could cover lots of ground and make better money on all kinds of jobs. Take it from *me*, if you want to get the most for your money, get a MICHIGAN!

"IT'S FAST ON THE ROAD—
Gets to the job as fast as a truck, and under its own power.

"IT MOVES DIRT FAST—
Anyway you look at it, it's *yard*-age that counts. MICHIGAN'S 5.4 RPM swing and fast air clutches give you the extra yards a day you're after.



"IT'S *REALLY* BUILT—
Any time you put a shovel on a truck you need a chassis that's designed for the job. And MICHIGAN *knows how*—they've built their own chassis for years.

"IT'S EASY TO HANDLE—
You know that if a machine is rough on the operator he'll probably be rough on the machine. MICHIGAN'S air ram clutches are fast and easy. They take the work out of operating. That's why my operators like to run the MICHIGAN."

See MICHIGAN Truck Shovels at work on jobs like yours — write for Bulletin 100, "On The Job with MICHIGAN."

MICHIGAN

MICHIGAN POWER SHOVEL COMPANY, 500 Second Street, Benton Harbor, Michigan, U. S. A.

Putting through 1500 phone calls at once - - - on TIMKEN® bearings

TO lay co-axial cable, designed to carry 1500 phone calls simultaneously, American Telephone and Telegraph uses a specially-developed cable-laying plow, pulled by crawler type tractors. An Allis-Chalmers tractor is shown in the photograph. When the going is unusually rough, several tractors are often used.

With Timken® bearings on tractors and plow, fewer delays on the job are experienced. Time spent in bearing lubrication and maintenance is negligible. The equipment lasts longer and works better.

Timken tapered roller bearings hold moving parts in rigid alignment, preventing excessive wear and insuring smooth operation. They're made from Timken fine alloy steel, and due to line contact between rolls and races, they have tremendous load-carrying capacity. Even under the toughest loads, their true rolling motion and smooth surface finish enable Timken bearings to operate freely, frictionlessly.

Timken bearings permit the use of closures which effectively retain lubricant. They take any combination of radial and thrust loads and normally last the life of the machine.

No other bearing can give your equipment *all* the advantages you get from Timken bearings—backed by 49 years of bearing research and development. When buying construction machinery look for the Timken-equipped symbol. When buying bearings, look for the trademark "Timken". The Timken Roller Bearing Co., Canton 6, Ohio. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.

ALLIS-CHALMERS *20-ton Torque Converter Tractors and the 27-ton cable laying plow rely on Timken bearings at these points:*

IN THE TRACTOR:
Bevel gear shaft
Final drive
Front idler
Support roller
Truck wheel

IN THE PLOW:
Wheels

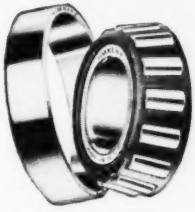
Photograph courtesy Allis-Chalmers Manufacturing Company

TIMKEN BEARING CAPACITY RATINGS INCREASED 25%.

Since Timken bearings were last re-rated some 15 years ago there has been such a further and constant improvement in quality that we are now able to announce a 25% increase in radial and thrust load carrying capacity. This may make possible the use of smaller bearings with savings in bearing cost, material cost and weight. Engineers will be able to utilize the advantages of Timken bearings in more applications than in the past.

A new Timken Engineering Journal, now in preparation, will give you complete capacity rating tabulations. For further assistance, write us today.

TIMKEN
TAPERED
ROLLER BEARINGS



NOT JUST A BALL — NOT JUST A ROLLER — THE TIMKEN TAPERED ROLLER — BEARING TAKES RADIAL — AND THRUST — LOADS OR ANY COMBINATION